United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Ohio Department of
Natural Resources,
Division of Soil and Water
Conservation; Ohio
Agricultural Research and
Development Center;
Ohio State University
Extension; Hancock Soil
and Water Conservation
District; and Hancock
County Commissioners

Soil Survey of Hancock County, Ohio

How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

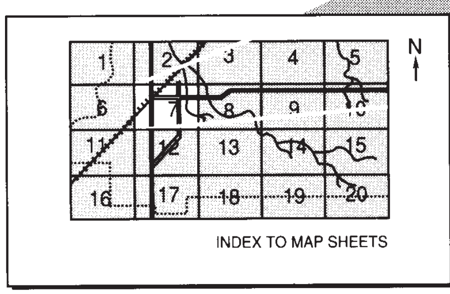
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

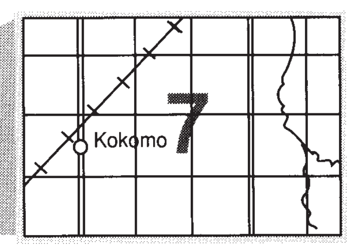
To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



INDEX TO MAP SHEETS



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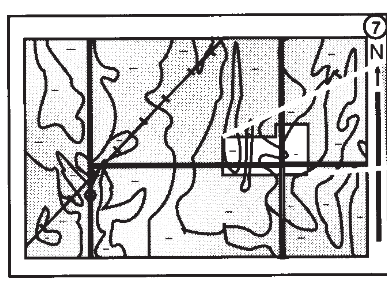

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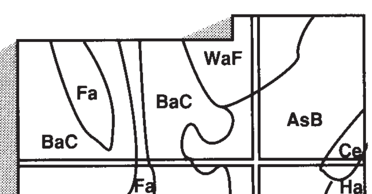

AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1995. Soil names and descriptions were approved in 1997. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1995. This survey was made cooperatively by the Natural Resources Conservation Service; the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; the Ohio State University Extension; the Hancock Soil and Water Conservation District; and the Hancock County Commissioners. The survey is part of the technical assistance furnished to the Hancock Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover (clockwise from upper left): A typical farmstead in an area of Tuscola silt loam, 2 to 6 percent slopes; a profile of well drained Fox loam, 2 to 6 percent slopes; urbanization in an area of Blount and Glynwood soils; a riparian corridor in an area of Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded, along the Blanchard River; and a grassed waterway in an area of Blount silt loam, 2 to 4 percent slopes.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov.

Contents

Issued April 2006

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Terry J. Cosby
State Conservationist
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Soil Survey of
Hancock County, Ohio

By Rick A. Robbins and Mark M. Feusner, Ohio Department of Natural Resources, Division of Soil and Water Conservation, and Jeffrey A. Glanville, United States Department of Agriculture, Natural Resources Conservation Service

Fieldwork by Rick A. Robbins and Mark M. Feusner, Ohio Department of Natural Resources, Division of Soil and Water Conservation

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Ohio Department of Natural Resources, Division of Soil and Water Conservation; the Ohio Agricultural Research and Development Center; the Ohio State University Extension; the Hancock Soil and Water Conservation District; and the Hancock County Commissioners

Hancock County is in the northwestern part of Ohio (fig. 1). It is bordered by Wood County to the north, Seneca and Wyandot Counties to the east, Hardin County to the south, and Allen and Putnam Counties to the west. Hancock County has an area of 341,561 acres, or about 534 square miles. Findlay, the county seat, is located near the center of the county. In 1990, the population of the county was 65,536 and the population of Findlay was 35,703 (U.S. Department of Commerce 1990).

Most of the county is used for agriculture. The main enterprises are cash-grain farming and some livestock production and dairy operations. Urban or built-up land makes up about 11 percent of the county (Hancock Soil and Water Conservation District 1995). Areas adjacent to Findlay and Interstate 75 are being urbanized more rapidly than other areas of the county. Manufacturing is the largest source of employment in the county. The service and retail trade industries are also important sources of employment.

The survey area mostly is nearly level or gently sloping. The areas of more sloping topography are on end moraines or are related to dissection along streams and river valleys. Wetness is the main limitation affecting most of the soils in the county. The hazard of erosion is also a concern in gently sloping or sloping areas.

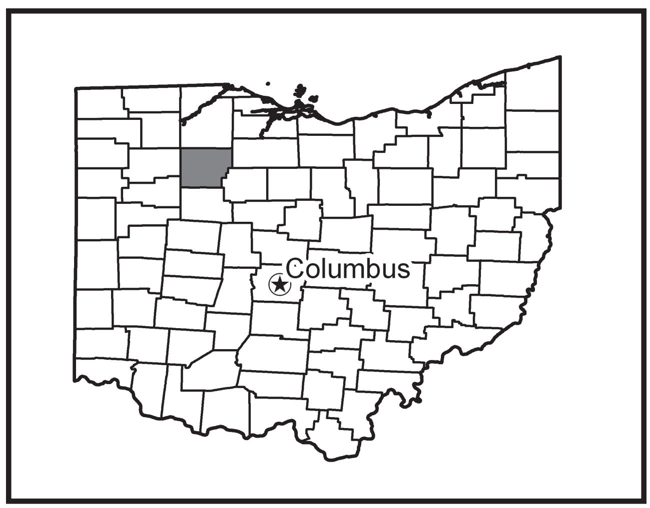

Figure 1.—Location of Hancock County in Ohio.

The county has some locally unique physiographic features. A large outlier of bedrock (known locally as Limestone Ridge) is in the east-central part of the county. The northern part of the county was the lakebed for Glacial Lake Maumee, and the Findlay Basin, in the west-central part of the county, was an embayment to the Lake. Relict beach ridges are obvious along State Routes 613 and 12. These ridges

mark the margins of Glacial Lake Maumee and the Findlay Basin.

This soil survey updates the survey of Hancock County published in 1973 (Rapparlie and Urban 1973). It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the County

This section provides some general information about the survey area. It describes climate; history; physiography, relief, and drainage; mineral resources; glacial geology; bedrock geology; farming; and transportation facilities.

Climate

Hancock County is cold in winter and hot in summer. Winter precipitation, frequently in the form of snow, results in a good accumulation of soil moisture by spring and minimizes drought during the summer. Normal annual precipitation patterns are adequate for all of the crops that are adapted to the temperature and the growing season in the survey area.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Findlay in the period 1961-90. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 26.0 degrees F and the average daily minimum temperature is 18.7 degrees. The lowest temperature on record, which occurred at Findlay on January 19, 1994, is -20 degrees. In summer, the average temperature is 70.9 degrees and the average daily maximum temperature is 81.4 degrees. The highest recorded temperature, which occurred on June 25, 1988, is 104 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual precipitation is 36.29 inches. Of this, 20.7 inches, or 57 percent, usually falls in May through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 6.25 inches on September 1, 1959. Thunderstorms occur on about 37 days each year, and most occur during the period May through August.

The average seasonal snowfall is about 29 inches. The heaviest 1-day snowfall on record was 15.2 inches on January 31, 1982. The greatest snow depth at any one time during the period of record was 23 inches. On the average, 45 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 58 percent. Humidity is higher at night, and the average at dawn is about 84 percent. The sun shines 67 percent of the time possible in summer and 41 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 11 miles per hour, in January through April.

History

Prior to settlement by European immigrants, the latest inhabitants of the survey area were Native Americans from the Wyandot and Ottawa Tribes. These people grew corn and other crops in small clearings to supplement their diet.

From the French and Indian War in 1756 until the War of 1812, the area had been the scene of hostilities among the Native Americans, the American colonists, and the countries of France and England. The defeat of the Native Americans and others in the War of 1812 and the acquisition of their lands opened the way for settlement of the county.

During the early years of settlement, settlers came from other areas in Ohio, from Virginia, and from the Northeastern States. Most were of German, English, Irish, or Scottish descent (Beardsley 1881). These settlers began clearing the vast forest area so they could raise livestock and cultivate crops. Initially, the settlers cultivated the better drained, rolling soils along streams and the higher areas on end moraines. Cattle, hogs, and sheep were pastured in the remaining areas of woodland and on the wetter soils. Corn, wheat, and hay were raised for local consumption. It was not until the later 1800s, with the advent of tiling and ditching, that large areas of fertile lowlands and marshes were opened to cultivation.

Agriculture has played a dominant role in the settlement and development of Hancock County. The oil boom in the late 1800s was responsible for providing an influx of inhabitants to the county. Even with the present-day economic dependence on industry and manufacturing, Hancock County still relies heavily on the economic base provided by agricultural enterprises.

Physiography, Relief, and Drainage

Hancock County is part of the Central Lowland Province. Most of the physiographic features in the county are a result of Wisconsinan Glaciation. As an area of lake plain and till plain physiography, Hancock County has a relatively uniform, level topography. The highest point in the county is about 955 feet above sea level, along the Hardin County line, in Orange Township. The lowest point in the county is about 715 feet above sea level, where Rader Creek enters Wood County, in Pleasant Township. In most areas of the county, slope is 6 percent or less. The steeper areas are associated with end moraines or stream dissection or are on bedrock ridges.

Hancock County drains northward into Lake Erie. There are five distinct watershed areas in the county. The primary watersheds include the Blanchard River, which drains to the north and west, and the Portage River, which drains to the north. The other watersheds are drained by small creeks.

Mineral Resources

The mineral resources of Hancock County include bedrock, sand, and gravel. Most of these resources have been of minor extent, mainly because of the relatively thin deposits of high-quality materials for wide commercial use. Natural gas and oil were extracted heavily from the underlying bedrock during the latter part of the 19th century (Ohio Department of Natural Resources 1992).

Dolostone and limestone are the major bedrock components of Hancock County. These rocks compose the Salina, Greenfield, Lockport, and Tymochtee Groups, which formed during the Silurian age (Ohio Department of Natural Resources 1999). Limestone has been mined from these formations in several areas of the county; however, only the quarry in the city of Findlay is currently active. Since limestone is at or near the surface in Hancock County, many small, inactive limestone quarries are scattered throughout the county. Most of the limestone is used for agricultural or industrial purposes or in the transportation industry.

Small sand and gravel pits are scattered throughout the county, mostly along beach ridges, rivers, and streams. No sites in the county are currently being quarried. The sand and gravel deposits are of limited size, ranging from 1 to 10 acres. The largest gravel pit, along a beach ridge in the north-central part of the county, was about 25 acres in size at the time it was abandoned.

Glacial Geology

Richard R. Pavey, Ohio Department of Natural Resources, Division of Geological Survey, helped to prepare this section.

Significantly later in geological time (about 2 million years ago), glaciers began to move across the area in a southwestward direction. Many glacial advances, with ice as much as 1 mile thick, and the subsequent melting and recessions filled valleys and low bedrock areas with till and glaciolacustrine sand, silt, and clay. The Late Wisconsinan glaciers, approximately 15,000 to 24,000 years ago, were the last glaciers to cover Hancock County (Forsyth 1961). The glacial ice gouged out a preglacial river valley to form the Lake Erie Basin. See the “Geographic Landform Map” for the location of geologic features described in this section. As sheets of ice advanced uphill out of the basin, high bedrock areas obstructed glacial deposition, leaving the bedrock hills thinly covered with drift or completely exposed. Examples of soils that formed in a thin mantle of glacial material over bedrock include Channahon, Millsdale, and Milton soils. Biglick soils formed in residuum on rock outcrops.

Away from the bedrock hills, thicker layers of glacial material were deposited. As the ice sheet melted and receded, the unsorted material carried by the glacier was deposited in a fairly uniform layer known as till. The thickness and composition of till vary widely within the county. Soil formation in the till is generally only a few feet thick. In areas where these till layers were very thin or eroded away, soils formed in the older, harder till. The clay content of the till is highest on the Defiance Moraine and in the Glacial Lake Maumee Basin, and it is lowest near bedrock areas where the ice sheets eroded and transported some of the coarser local material. Blount, Mortimer, and Pewamo soils formed in till.

As the glacial ice was receding for the last time, the Erie Basin was filled by a series of different lakes that formed in front of the ice sheet. For a few thousand years, lake levels varied in these lakes as drainage outlets were blocked or opened by the fluctuating ice front of the last glacier. Lacustrine sediments settled out of the water in these glacial lakes. Some soils in the county formed in these glaciolacustrine deposits. They include Del Rey, Fulton, and Toledo soils.

There are two distinct segments of Glacial Lake Maumee in Hancock County. The main body of the lake lies north of State Route 613. Fluctuating lake levels and wave action smoothed out shallow bottom areas, wave planed the till, and provided coarse sediments to form beaches. Beach ridges in the

county are products of these earlier lake levels. Fox, Oshtemo, and Shawtown soils formed in these materials. In the northern part of the county are peculiarly shaped segments of old beach ridges. These remnants provide evidence of the reworking of beach sediments during subsequent higher lake levels, caused by slight readvances of the ice sheet far to the north. In shallow water areas, wave action washed the finer sized particles out of the glacial material, leaving patches of coarser sediments on top of the till. Haskins and Mermill soils formed in this water modified till material. Hoytville and Nappanee soils formed in areas where the till was wave planed by shallow lake water. The Findlay Embayment is in the west-central part of the county and lies between U.S. Route 224 and State Route 12. In the Findlay Embayment, a continual source of sediment to the embayment was the outwash plain that extends to the east.

Hancock County had a very dynamic geologic history during the Pleistocene. The exact sequence of events is not well understood, but numerous indicators help piece together the geologic events. There are glaciofluvial sediments buried under 7 to 14 feet of till in the Findlay Embayment.

Two end moraines cross Hancock County in a general east-west direction (Ohio Department of Natural Resources 1998). The northernmost moraine is the Defiance Moraine. This moraine was heavily influenced by Glacial Lake Maumee and its predecessor, especially in the western part of the county, where glaciolacustrine sediments overlie the till. Maumee's predecessor was responsible for the deposition of lacustrine sediments on the crest of the moraine. Numerous small potholes or depressions in the moraine reflect the ice stagnation and wasting by the glacier (fig. 2).

During the initial level of Lake Maumee, the water reached an approximate level of 800 feet above sea level (Forsyth 1959). The water reached close to the summit of the moraine and, in some cases, breached the moraine and joined the Findlay Embayment to the south. Today, this moraine also separates the surface water between the Portage River and Blanchard River watersheds.

The Fort Wayne Moraine is in the southern part of the county. It is not so well defined as the Defiance Moraine and does not appear to have had such a dynamic history as the Defiance Moraine. Glacial meltwater channels, which were predecessors of modern day stream drainage patterns, fed the Findlay Embayment. Modern day streams follow some of these channels, but the unauthorized use of water from streams has modified the drainage pattern of the channels in some areas.

Bedrock Geology

Richard R. Pavey, Ohio Department of Natural Resources, Division of Geological Survey, helped to prepare this section.

Hancock County is in the eastern part of the Central Lowland Province. Proceeding from west to east in Hancock County, the underlying bedrock dips and becomes progressively younger. The bedrock within the county is of sedimentary origin, primarily Silurian limestone and dolostone (Ohio Department of Natural Resources 1947).

The Salina Undifferentiated Group underlies the western part of the county, especially in Blanchard, Orange, Pleasant, and Union Townships. The Tymochtee Group underlies an area ranging from the central part to the southeastern part of the county, especially in Delaware, Jackson, Madison, and Eagle Townships. The Tymochtee Group lies east of the Bowling Green fault, which parallels Interstate 75 before turning southeast near Findlay. East of the fault, the bedrock is dominated by the Greenfield and Lockport Groups. These groups underlie Biglick, Cass, Marion, and Amanda Townships (Ohio Department of Natural Resources 1999).

The Bowling Green fault is a major structural feature in the northwestern part of Ohio. The area east of the fault was the primary location of numerous gas and oil wells during the late 1800s (Ohio Department of Natural Resources 1992).

During the Silurian, Devonian, and Mississippian times (420 to 350 million years ago), Hancock County was covered by a large, tropical inland sea. In the deeper areas, sediments consisting of deposits of carbonate precipitates, shells, and corals formed limestone and dolostone. Silt and clay sediments formed shale, while quartz and other silicate minerals were deposited and formed sandstone in shallow water areas. As sedimentation and cementation continued, the pressures generated by the tremendous weight of the overlying sediments formed the bedrock of the county.

This depositional stage was followed by a prolonged period of geologic erosion that left a landscape characterized by bedrock hills and stream valleys. Surface water drained northward into a large, eastward-flowing valley that was in the present-day Lake Erie Basin. Erosion left the oldest bedrock units exposed in the northwestern part of the county and the youngest exposed in the southeastern part.

Figure 2.—Pothole (a closed depression) topography on the Defiance Moraine. Pewamo silty clay loam, 0 to 1 percent slopes, is in the darker areas in depressions, and Del Rey-Blount complex, 0 to 3 percent slopes, is in the lighter colored areas on summits and shoulders.

Farming

Agriculture is the primary land use in Hancock County. In 1982, farms made up about 292,314 acres, or nearly 86 percent of the land in Hancock County. There were 1,299 farms in the county, with an average size of 225 acres (U.S. Department of Commerce 1993). About 263,290 acres was used as cropland (U.S. Department of Commerce 1993) and about 5,100 acres as pasture. Only about 16,900 acres of the county was urban or built-up land (USDA, SCS 1992). Ten years later, in 1992, farms made up only 275,644 acres, or nearly 81 percent of the land in the county. The number of farms had decreased to 1,032, with an average size of 267 acres. About 259,189 acres was used as cropland, 6,700 acres was used as pasture, and 27,400 acres was urban or built-up land (U.S. Department of Commerce 1993). These facts reflect the nationwide trends toward larger farms with fewer operators and the conversion of farmland to urban or nonfarm uses.

Corn, soybeans, and wheat are the principal crops in the county, but the soils and climate also are suited to grain sorghum, sunflower, oats, barley, rye, and buckwheat. Specialty crops, such as tomatoes, sugar beets, and cucumbers, could be grown more extensively in the survey area.

Transportation Facilities

Hancock County is accessible by land and air. Interstate 75, which crosses the county from north to south, provides rapid access to Toledo and Cincinnati. Additional access is provided by 3 Federal highways and 10 State highways. These highways and a system of well-paved county and township roads provide easy access to all areas of the county.

Four major railroad lines traverse the county. Two airports, Bluffton and Findlay Municipal, are located in the county.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the county are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Some boundaries and names of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of changes and refinements in series concepts, updated soil taxonomy, slightly different map unit composition in the survey areas, and use of the State Soil

Geographic data (STATSGO) map as the base for the general soil map in this publication.

Soil Survey Procedures

Hancock County was one of the first counties in northwestern Ohio to have a soil survey modernization. The general procedures followed in making this survey are described in the “National Soil Survey Handbook” (USDA, NRCS 1996). The “Soil Survey of Hancock County, Ohio” published in 1973 (Rapparlie and Urban 1973) and U.S. Geological Survey (USGS) topographic quadrangles were among the references used.

Prior to the soil survey modernization, a soil survey review team conducted an evaluation of the 1973 Hancock County soil survey at the request of the Hancock County Commissioners and Hancock Soil and Water Conservation District. A report of the evaluation was prepared and sent to the Ohio Soil Inventory Board for review. After reviewing the evaluation report, the Soil Inventory Board recommended a soil survey modernization program and outlined the work to be completed for the soil survey modernization.

Before the actual fieldwork was begun, a detailed study of all existing laboratory data, soil survey reports, and research studies was conducted by the Hancock County soil survey staff. The soil scientists used USGS topographic maps, at a scale of 1:24,000, to relate land and image features.

Hancock County includes a large number of soil series. The 1973 soil survey is a valuable historical document that was relied on extensively during the modernization process. Patterns of soils on the landscape are typically complex. Modern soil survey procedures differ from those used in the earlier survey. Some soil series names used in the earlier report no longer apply to the soils that were mapped and correlated during this update. Soil scientists making the 1973 survey did not recognize all of the soil series that current soil scientists using modern taxonomy and classification recognized during this survey. In addition, soil observations and evaluations during the 1973 survey were made to a depth of 60 inches or less, and during this modernization project, observations and evaluations were routinely made to a depth of 80 inches or to bedrock.

Recent aerial photographs, photographs from earlier flights, a geology map of Ohio (Ohio Department of Natural Resources 1947), and the USGS quadrangles were used in making the survey. The maps and soil descriptions in the previous soil survey of Hancock County were used as references in the correlation of soil series and map units (Rapparlie and Urban 1973). The old survey was also used to determine the areas of highest variability when the mapping and transect intervals were planned.

A reconnaissance was made by vehicle before the soil scientists traversed the surface on foot and examined the soils. As they traversed the surface, the soil scientists divided the landscape into segments based on the use and management of the soils. For example, a rise would be separated from a depression or a gently sloping knoll or a backslope would be separated from a flat. Soil map units were traversed at varying intervals depending on the complexity of the soil types and patterns in the area. Sample map units from the 1973 survey were transected. Borings were made at selected intervals on the transect to determine the composition of soil types within the map units. Soil scientists compared existing map units with the soil types in the area to see if earlier unrecognized soils with significant interpretive differences should be identified and separated during the survey modernization. Map unit boundaries were determined on the basis of soil examinations, observations, and photo interpretation (fig. 3). When necessary, map units were redelineated so that new series could be included and soil types recognized earlier could be better differentiated. Some map units were enlarged to include units previously mapped as another soil type when the differences in soil properties were not significant enough to require an additional map unit delineation. A data location map denoting where traverses and observations were made is on file at the Northwestern Ohio Soil Survey Project Office in Findlay.

After completion of the fieldwork, map unit delineations were transferred by hand to another set of planimetrically correct photographs. Surface features were recorded from observation of the maps and the landscape.

Representative pedon sites from the 1973 survey were located, and the soils at these sites were examined in order to determine if they would meet present-day interpretation needs. The classification of these pedons also was compared with modern soil taxonomy standards. If the pedon was found to differ significantly in characteristics, a new pedon site was located that had soil properties that were representative of observations made during this soil survey.

Most soils were examined using hand augers and soil tubes. Field notes were taken during the evaluation process. Deeper samples were taken to document soil material to a depth of 80 inches or to bedrock if it was within a depth of 80 inches. These

Figure 3.—Typical soil patterns in Hancock County. The light colored areas are Blount and Glynwood soils and the darker areas Pewamo soils.

samples were obtained by taking soil cores using a probe truck or using a hand auger with extensions. Pedons described as typical were studied and documented in dug pits. Samples for laboratory analysis were taken at these pits and at other locations in the county to obtain chemical and physical analyses and to determine engineering properties. This information was used in the classification, correlation, and interpretation of specific soil types.

General Soil Map Units

The general soil map in this publication shows the soil associations in this survey area. Each association has a unique natural landscape. Typically, an association consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Blount-Pewamo association

Very deep, level to gently sloping, somewhat poorly drained and very poorly drained soils that formed in till

Setting

Landform: Rises, knolls, flats, depressions, and drainageways on ground moraines and end moraines
Slope range: 0 to 4 percent

Composition

Extent of the association: 55 percent of the county
Extent of the soils in the association:
Blount and similar soils—50 percent
Pewamo and similar soils—34 percent
Minor soils—16 percent

Soil Properties and Qualities

Blount

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises, knolls, and flats
Parent material: Till
Texture of the surface layer: Silt loam or loam
Slope: 0 to 4 percent
Permeability: Slow in the solum and slow or very slow in the substratum
Available water capacity: Moderate

Pewamo

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Flats, depressions, and drainageways
Parent material: Till
Texture of the surface layer: Silty clay loam
Slope: 0 to 2 percent
Permeability: Moderately slow
Available water capacity: High

Minor Soils

- The moderately well drained Glynwood soils on knolls and rises
- The loamy, moderately well drained Houcktown soils on knolls

Use and Management

Major uses: Cropland, woodland
Management concerns: Seasonal wetness, tilth, compaction, ponding

2. Blount-Glynwood-Pewamo association

Very deep, level to strongly sloping, somewhat poorly drained, moderately well drained, and very poorly drained soils that formed in till

Setting

Landform: Rises, knolls, flats, depressions, and drainageways on ground moraines and end moraines (fig. 4)
Slope range: 0 to 12 percent

Composition

Extent of the association: 7 percent of the county
Extent of the soils in the association:
Blount and similar soils—45 percent
Glynwood and similar soils—27 percent

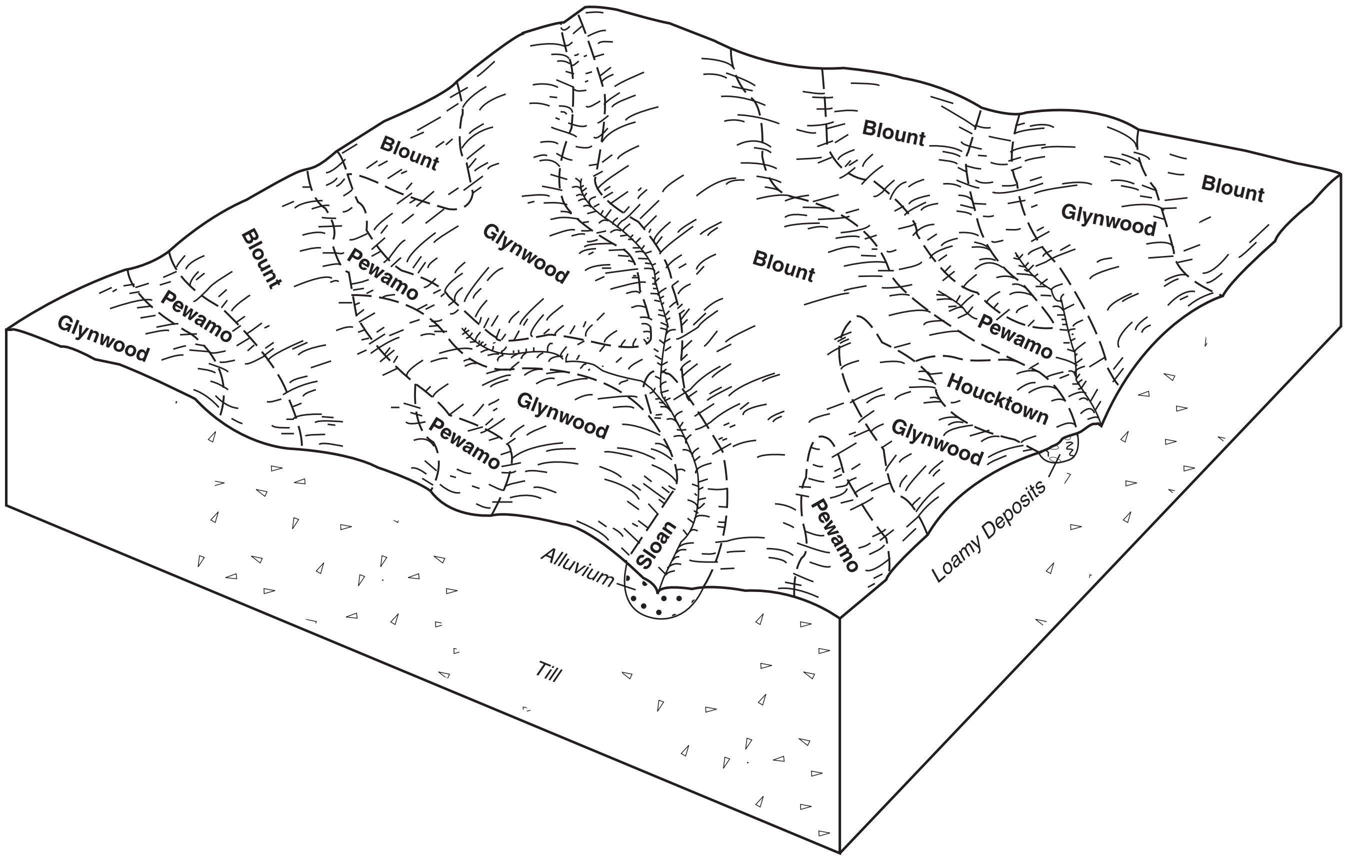

Figure 4.—Typical pattern of soils and parent material in the Blount-Glynwood-Pewamo association.

Pewamo and similar soils—19 percent
Minor soils—9 percent

Soil Properties and Qualities

Blount

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises, knolls, and flats
Parent material: Till
Texture of the surface layer: Silt loam or loam
Slope: 0 to 4 percent
Permeability: Slow in the solum and slow or very slow in the substratum
Available water capacity: Moderate

Glynwood

Depth class: Very deep
Drainage class: Moderately well drained
Landform: Rises and knolls
Parent material: Till
Texture of the surface layer: Silt loam, silty clay loam, or clay loam
Slope: 2 to 12 percent
Permeability: Slow in the solum and slow or very slow in the substratum
Available water capacity: Moderate

Pewamo

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Flats, depressions, and drainageways
Parent material: Till
Texture of the surface layer: Silty clay loam
Slope: 0 to 2 percent
Permeability: Moderately slow
Available water capacity: High

Minor Soils

- The very poorly drained Sloan soils on flood plains
- The loamy, moderately well drained Houcktown soils on knolls and rises

Use and Management

Major uses: Cropland, woodland
Management concerns: Erosion, seasonal wetness, tilth, compaction, ponding

3. Millsdale-Milton-Morley, limestone substratum, association

Moderately deep and very deep, level to gently sloping, very poorly drained, well drained, and moderately well drained soils that formed in till overlying limestone or dolostone or in till and the underlying residuum derived from limestone or dolostone

Setting

Landform: Flats, depressions, drainageways, rises, and knolls on ground moraines and on monadnocks on ground moraines
Slope range: 0 to 6 percent

Composition

Extent of the association: 1 percent of the county
Extent of the soils in the association:
Millsdale and similar soils—31 percent
Milton and similar soils—19 percent
Morley and similar soils—17 percent
Minor components—33 percent

Soil Properties and Qualities

Millsdale

Depth class: Moderately deep
Drainage class: Very poorly drained
Landform: Flats, depressions, and drainageways
Parent material: Till overlying limestone or dolostone
Texture of the surface layer: Silty clay loam
Slope: 0 to 1 percent
Permeability: Moderately slow
Available water capacity: Low

Milton

Depth class: Moderately deep
Drainage class: Well drained
Landform: Flats, rises, and knolls
Parent material: Till and the underlying residuum from limestone or dolostone
Texture of the surface layer: Silt loam or loam
Slope: 0 to 6 percent
Permeability: Moderately slow
Available water capacity: Low

Morley, limestone substratum

Depth class: Very deep
Drainage class: Moderately well drained
Landform: Knolls and rises
Parent material: Till overlying limestone or dolostone
Texture of the surface layer: Loam
Slope: 0 to 6 percent
Permeability: Moderately slow or slow in the solum and slow or very slow in the till substratum
Available water capacity: Moderate

Minor Components

- The very poorly drained Pewamo soils in depressions and drainageways
- Areas of Pits, quarry
- The somewhat poorly drained Blount soils in areas that are deeper to limestone

Use and Management

Major uses: Cropland, woodland, idle land
Management concerns: Droughtiness, erosion, seasonal wetness, a moderately deep root zone, compaction, ponding

4. Hoytville-Nappanee association

Very deep, level to gently sloping, very poorly drained and somewhat poorly drained soils that formed in till

Setting

Landform: Flats, depressions, drainageways, rises, knolls, and dissected areas on lake plains (fig. 5)
Slope range: 0 to 6 percent

Composition

Extent of the association: 11 percent of the county
Extent of the soils in the association:
Hoytville and similar soils—72 percent
Nappanee and similar soils—12 percent
Minor soils—16 percent

Soil Properties and Qualities

Hoytville

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Flats, depressions, and drainageways
Parent material: Till
Texture of the surface layer: Silty clay or silty clay loam
Slope: 0 to 1 percent
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Available water capacity: Moderate

Nappanee

Depth class: Very deep
Drainage class: Somewhat poorly drained

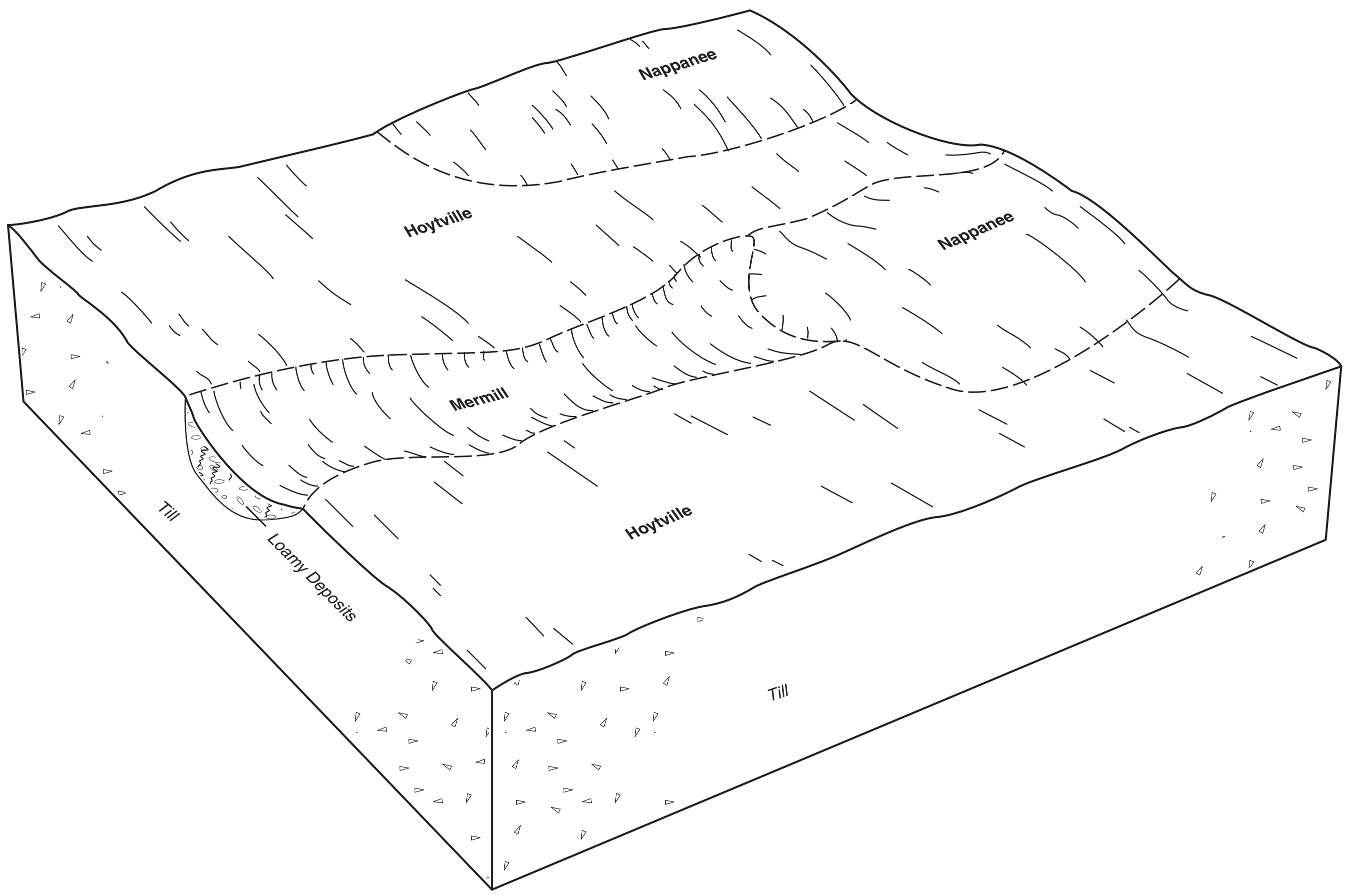

Figure 5.—Typical pattern of soils and parent material in the Hoytville-Nappanee association.

Landform: Flats, rises, and dissected areas
Parent material: Till
Texture of the surface layer: Silty clay loam or loam
Slope: 0 to 6 percent
Permeability: Slow in the solum and slow or very slow in the substratum
Available water capacity: Moderate

Minor Soils

- The loamy, somewhat poorly drained Aurand soils on beach ridges
- The loamy, somewhat poorly drained Haskins soils on rises and knolls
- The loamy, very poorly drained Mermill soils in depressions and drainageways
- The loamy, very poorly drained Sloan soils on flood plains

Use and Management

Major uses: Cropland
Management concerns: Seasonal wetness, a high content of clay in the surface layer and subsoil, erosion, ponding

5. Pewamo-Vanlue-Tiderishi association

Very deep, level and nearly level, very poorly drained and somewhat poorly drained soils that formed in till or in glaciolacustrine deposits overlying till

Setting

Landform: Flats, depressions, drainageways, and rises on lake plains
Slope range: 0 to 2 percent

Composition

Extent of the association: 7 percent of the county
Extent of the soils in the association:
Pewamo and similar soils—42 percent
Vanlue and similar soils—18 percent

Tiderishi and similar soils—18 percent
Minor soils—22 percent

Soil Properties and Qualities

Pewamo

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Flats, depressions, and drainageways
Parent material: Till
Texture of the surface layer: Silty clay loam
Slope: 0 to 1 percent
Permeability: Moderately slow
Available water capacity: High

Vanlue

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises
Parent material: Stratified loamy and silty glaciolacustrine deposits overlying till
Texture of the surface layer: Loam
Slope: 0 to 2 percent
Permeability: Moderate in the loamy solum and moderately slow or slow in the lower part of the solum and in the substratum
Available water capacity: High

Tiderishi

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises and flats
Parent material: Stratified loamy glaciolacustrine deposits overlying till
Texture of the surface layer: Loam
Slope: 0 to 2 percent
Permeability: Moderate in the solum and moderately slow or slow in the substratum
Available water capacity: Moderate

Minor Soils

- The well drained Rossburg soils on flood plains
- The very poorly drained Rensselaer soils in flat areas and in depressions

Use and Management

Major uses: Cropland
Management concerns: Seasonal wetness, compaction, tilth, ponding

6. Pewamo-Blount-Houcktown association

Very deep, level to gently sloping, very poorly drained, somewhat poorly drained, and moderately well drained soils that formed in till or in loamy deposits and the underlying till

Setting

Landform: Depressions, drainageways, flats, rises, and knolls on end moraines and ground moraines
Slope range: 0 to 6 percent

Composition

Extent of the association: 10 percent of the county
Extent of the soils in the association:
Pewamo and similar soils—28 percent
Blount and similar soils—23 percent
Houcktown and similar soils—20 percent
Minor soils—29 percent

Soil Properties and Qualities

Pewamo

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Flats, depressions, and drainageways
Parent material: Till
Texture of the surface layer: Silty clay loam
Slope: 0 to 1 percent
Permeability: Moderately slow
Available water capacity: High

Blount

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises, knolls, and flats
Parent material: Till
Texture of the surface layer: Silt loam or loam
Slope: 0 to 4 percent
Permeability: Slow in the solum and slow or very slow in the substratum
Available water capacity: Moderate

Houcktown

Depth class: Very deep
Drainage class: Moderately well drained
Landform: Rises and knolls
Parent material: Loamy deposits and the underlying till

Texture of the surface layer: Loam
Slope: 0 to 6 percent
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Available water capacity: Moderate

Minor Soils

- The loamy, very poorly drained Sloan soils on flood plains
- The moderately well drained Glynwood soils on knolls and rises

Use and Management

Major uses: Cropland, woodland
Management concerns: Erosion, seasonal wetness, tilth, compaction, ponding

7. Alvada-Lamberjack-Sloan association

Very deep, level and nearly level, very poorly drained and somewhat poorly drained soils that formed in loamy, sandy, or gravelly deposits overlying till; in alluvium; or in alluvium overlying limestone or dolostone

Setting

Landform: Depressions, drainageways, and rises on outwash plains and on flats and backswamps on flood plains
Slope range: 0 to 2 percent

Composition

Extent of the association: 5 percent of the county
Extent of the soils in the association:
Alvada and similar soils—31 percent
Lamberjack and similar soils—29 percent
Sloan and similar soils—13 percent
Minor soils—27 percent

Soil Properties and Qualities

Alvada

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Depressions and drainageways
Parent material: Loamy and gravelly deposits overlying till
Texture of the surface layer: Loam
Slope: 0 to 2 percent
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Available water capacity: Moderate

Lamberjack

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises
Parent material: Loamy, sandy, and gravelly outwash overlying till
Texture of the surface layer: Loam
Slope: 0 to 2 percent
Permeability: Moderate in the loamy solum, rapid in the gravelly and sandy substratum, and slow or very slow in the till substratum
Available water capacity: Moderate

Sloan

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Flats and backswamps
Parent material: Alluvium or alluvium overlying limestone or dolostone
Texture of the surface layer: Loam or silty clay loam
Slope: 0 to 1 percent
Permeability: Moderate or moderately slow
Flooding frequency: Occasional
Available water capacity: High

Minor Soils

- The very poorly drained Adrian soils in depressions
- The well drained Oshtemo soils on backslopes, shoulders, and summits
- The well drained Flatrock soils on flood plains

Use and Management

Major uses: Cropland, woodland
Management concerns: Seasonal wetness, compaction, flooding, ponding

8. Pewamo-Del Rey-Blount association

Very deep, level to gently sloping, somewhat poorly drained and very poorly drained soils that formed in till or glaciolacustrine deposits

Setting

Landform: Depressions, drainageways, rises, knolls, and flats on disintegration moraines
Slope range: 0 to 4 percent

Composition

Extent of the association: 4 percent of the county
Extent of the soils in the association:
Pewamo and similar soils—35 percent
Del Rey and similar soils—22 percent

Blount and similar soils—17 percent
Minor soils—26 percent

Soil Properties and Qualities

Pewamo

Depth class: Very deep
Drainage class: Very poorly drained
Landform: Depressions, drainageways, and flats
Parent material: Till
Texture of the surface layer: Silty clay loam
Slope: 0 to 2 percent
Permeability: Moderately slow
Available water capacity: High

Del Rey

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Flats and rises
Parent material: Glaciolacustrine deposits
Texture of the surface layer: Silt loam
Slope: 0 to 3 percent
Permeability: Slow
Available water capacity: Moderate

Blount

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Rises, knolls, and flats
Parent material: Till
Texture of the surface layer: Silt loam or loam
Slope: 0 to 4 percent
Permeability: Slow in the solum and slow or very slow in the substratum
Available water capacity: Moderate

Minor Soils

- The moderately well drained Shinrock soils in the higher or more sloping areas
- The moderately well drained Glynwood soils on knolls and rises

Use and Management

Major uses: Cropland, woodland
Management concerns: Erosion, seasonal wetness, tilth, compaction, ponding

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

The detailed map unit descriptions include management statements for most major uses of the soils—cropland, pastureland, and woodland and as sites for buildings, septic tank absorption fields, and local roads and streets. The management statements listed for a particular map unit address the most limiting features of that soil for a certain use.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Blount silt loam, 0 to 2 percent slopes, is a phase of the Blount series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat

similar in all areas. Blount-Jenera complex, 0 to 3 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, quarry, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Figure 6 shows the relationship between different geomorphic slope positions and slope terminology. It was adapted from "Geomorphology: Geomorphic Processes and Surficial Geology" (Ruhe 1975). In areas of low relief in Hancock County, these terms generally are not used. Refer to the Glossary for more detailed definitions of these landform components.

AdA—Adrian muck, 0 to 1 percent slopes

Setting

Landform: Depressions on outwash plains
Size of areas: 10 to 200 acres or more

Map Unit Composition

Adrian soil and similar components: 100 percent

Minor Components

Similar components:
- Soils that have limestone bedrock at a depth of 60 to 80 inches
- Soils that have more silt and clay in the substratum than the Adrian soils
- Soils having organic deposits that are less than 16 inches thick
- Soils having organic deposits that are more than 52 inches thick

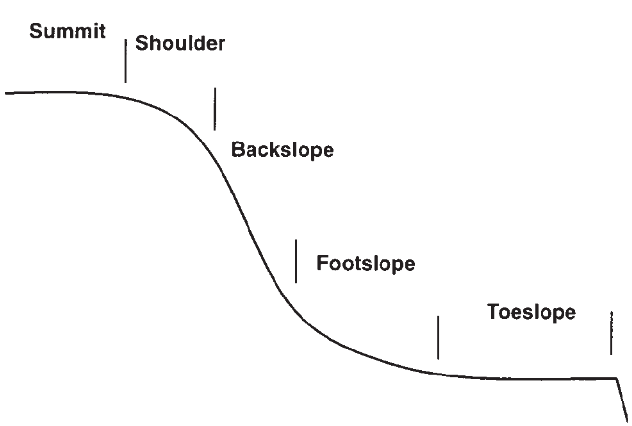

Figure 6.—Diagram showing the relationship between slope position and slope terminology.

Soil Properties and Qualities

Available water capacity: About 12.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 125 to 200 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 55 to 75 percent
Parent material: Herbaceous organic material and the underlying sandy deposits
Permeability: Moderately slow to moderately rapid in the organic material and rapid in the underlying sandy deposits
Potential for frost action: High
Shrink-swell potential: Low
Subsidence: Initial—6 to 18 inches; total—29 to 33 inches
Texture of the surface layer: Muck
Potential for surface runoff: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

- Maintaining vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage systems helps to remove excess water.
- Subsidence or shrinkage of the muck causes displacement of subsurface drains.
- Control of the water table helps reduce subsidence, prevent burning, and reduce the hazard of wind erosion.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• Ponding is a hazard affecting the safe use of logging trucks on roads.
• The seasonal high water table and the ponding can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• Because of the ponding and the high potential for subsidence, this soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.
• When drained, the organic layers in this soil subside. Subsidence leads to differential rates of settlement, which may cause foundations to break.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Subsidence of the organic material reduces the bearing capacity of the soil.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 4w
Pasture and hayland suitability group: D-1
Prime farmland status: Not prime farmland
Hydric soil status: Hydric soil

AkA—Alvada loam, 0 to 1 percent slopes

Setting

Landform: Depressions and drainageways on outwash plains, ground moraines, end moraines, and lake plains
Size of areas: 5 to 30 acres

Map Unit Composition

Alvada soil and similar components: 80 percent
Contrasting components: 20 percent

Minor Components

Similar components:
• Soils having a surface layer that is less than 10 inches thick
• Soils that have till at a depth of 60 to 80 inches
• Soils that have a surface layer of clay loam
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Lamberjack soils on rises (5 percent)
• Somewhat poorly drained soils on rises (5 percent)

Soil Properties and Qualities

Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 32 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy and gravelly deposits overlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• Ponding is a hazard affecting the safe use of logging trucks on roads.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is generally unsuited to building site development.
• Because water tends to pond on the soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

AmA—Alvada-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Depressions and drainageways on outwash plains
Size of areas: 5 to 50 acres

Map Unit Composition

Alvada soil and similar components: 50 percent
Urban land and similar components: 25 percent
Contrasting components: 25 percent

Minor Components

Similar components:
• Soils that have till below a depth of 60 inches
• Soils that have more clay and less sand in the subsoil than the Alvada soil
• Soils having a dark surface layer that is less than 10 inches thick
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (15 percent)
• Aurand soils on rises and knolls (5 percent)
• Aquents or Udorthents in areas adjacent to buildings and streets (3 percent)
• Lamberjack soils on rises and knolls (2 percent)

Soil Properties and Qualities

Alvada

Available water capacity: About 8.3 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 13 to 32 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Loamy and gravelly deposits overlying till

Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Alvada soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this Alvada soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Ponding affects the ease of excavation and grading and limits the bearing capacity of this Alvada soil.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Alvada—hydric soil; Urban land—not ranked

AnA—Aquents, clayey, 0 to 1 percent slopes

Setting

Landform: Borrow pits on ground moraines
Size of areas: 20 to 200 acres or more

Map Unit Composition

Aquents and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Pewamo soils
• Soils that are ponded for very long periods
• Soils that have a calcareous surface layer
Contrasting components:
• Blount soils on rises (8 percent)
• Soils that have a layer of organic material less than 2 inches thick and are in landscape positions similar to those of the Aquents (2 percent)

Soil Properties and Qualities

General description: Former borrow pits for clay that have been modified extensively by cutting, filling, and leveling. They are in areas where soil material was excavated for the manufacture of ceramic tile.
Available water capacity: About 5.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 17 to 34 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Perched
Duration of ponding: Long
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland

• These soils provide poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table and the ponding can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• Ponding is a hazard affecting the safe use of logging trucks on roads.
• The stickiness of the soils reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• These soils are generally unsuited to building site development.
• Because water tends to pond on the soils, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, these soils are generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of these soils.
• Because of shrinking and swelling, the soils may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Hydric soil

ApB—Arkport loamy fine sand, 2 to 6 percent slopes

Setting

Landform: Dunes, beach ridges
Position on the landform: Shoulders, summits, backslopes
Size of areas: 5 to 50 acres

Map Unit Composition

Arkport soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have till at a depth of 60 to 80 inches
• Soils that have a water table at a depth of 3 to 6 feet
• Soils that have more gravel and less sand in the substratum than the Arkport soil
Contrasting components:
• Somewhat poorly drained soils at the base of slopes (10 percent)

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 3 to 13 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy eolian deposits
Permeability: Moderately rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Potential for surface runoff: Very low
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Plant nutrients are leached at an accelerated rate because of the sandy layer in the soil.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Erosion control is needed when pastures are renovated.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• This soil is well suited to building site development.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• This soil is well suited to septic tank absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: B-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

ArA—Aurand loam, 0 to 2 percent slopes

Setting

Landform: Rises and flats on beach ridges and lake plains
Position on the landform: Footslopes on beach ridges; summits on lake plains
Size of areas: 5 to 50 acres

Map Unit Composition

Aurand soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils having a lighter colored surface layer than that of the Aurand soil
• Soils that have till at a depth of 40 to 60 inches
• Moderately well drained soils
• Soils having a dark surface layer that is less than 10 inches thick
• Soils that have more clay and less sand in the subsoil than the Aurand soil
Contrasting components:
• Mermill soils in depressions and drainageways (6 percent)
• Alvada soils in depressions and drainageways (3 percent)
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (1 percent)

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 48 inches
Cation-exchange capacity in the surface layer: 8 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum

Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

AsA—Aurand-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits
Size of areas: 10 to 50 acres

Map Unit Composition

Aurand soil and similar components: 50 percent
Urban land and similar components: 35 percent
Contrasting components: 15 percent

Minor Components

Similar components:
• Soils having a dark surface layer that is less than 10 inches thick
• Soils having a lighter colored surface layer than that of the Aurand soil
• Moderately well drained soils
• Soils that have more clay and less sand in the subsoil than the Aurand soil
• Soils that have till at a depth of 40 to 60 inches
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (5 percent)
• Mermill soils in depressions and drainageways (4 percent)
• Pewamo soils in depressions and drainageways (3 percent)
• Udorthents in areas adjacent to buildings and streets (3 percent)

Soil Properties and Qualities

Aurand

Available water capacity: About 6.6 inches to a depth of 50 inches
Cation-exchange capacity in the surface layer: 8 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Aurand soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this Aurand soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Aurand—not hydric; Urban land—not ranked

BgA—Biglick-Milton complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on monadnocks on ground moraines
Position on the landform: Shoulders, summits
Size of areas: 5 to 20 acres

Map Unit Composition

Biglick soil and similar components: 70 percent
Milton soil and similar components: 25 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have less clay in the subsoil
• Soils that have a surface layer of silt loam
• Soils having a darker surface layer
Contrasting components:
• Soils that have bedrock at a depth of 4 to 10 inches and are in similar landscape positions (5 percent)

Soil Properties and Qualities

Biglick

Available water capacity: About 2.5 inches to a depth of 14 inches

Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 1.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Thin layer of drift over clayey residuum derived from limestone or dolostone
Permeability: Moderately slow or slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Milton

Available water capacity: About 4.1 inches to a depth of 24 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till and the underlying residuum derived from limestone or dolostone
Permeability: Moderately slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management

Cropland

• In areas of these soils, the rooting depth of crops is restricted by bedrock and a high content of clay.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of these soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• These soils provide poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity of the soils.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• The rooting depth of plants may be restricted by bedrock.

Woodland

• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• The stickiness of the soils reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the Biglick soil, equipment used for site preparation should be operated only during dry periods.

Building sites

• Moderate shrinking and swelling of these soils may crack foundations and basement walls.
• Foundations and other structures may require some special design and construction techniques or maintenance.
• The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities in areas of these soils.
• In some areas of the soils, the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• Because of the limited depth to bedrock, these soils are generally unsuited to septic tank absorption fields.

Local roads and streets

• Because of shrinking and swelling, these soils may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of the soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• Because of the limited depth to hard bedrock, excavation is difficult in areas of the Biglick soil.
• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads in areas of the Milton soil.

Interpretive Groups

Land capability classification: 3s
Pasture and hayland suitability group: Biglick—E-1; Milton—F-1
Prime farmland status: Not prime farmland
Hydric soil status: Biglick—not hydric; Milton—not hydric

BgB—Biglick-Milton complex, 2 to 6 percent slopes

Setting

Landform: Knolls on monadnocks on ground moraines
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Biglick soil and similar components: 55 percent
Milton soil and similar components: 40 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have less clay in the subsoil
• Soils that have a surface layer of silt loam
• Soils that have a darker surface layer
Contrasting components:
• Soils that have bedrock at a depth of 4 to 10 inches and are in similar landscape positions (5 percent)

Soil Properties and Qualities

Biglick

Available water capacity: About 2.3 inches to a depth of 13 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 1.1 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Thin layer of drift over clayey residuum derived from limestone or dolostone
Permeability: Moderately slow or slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Milton

Available water capacity: About 4.3 inches to a depth of 26 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 2.2 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till and the underlying residuum derived from limestone or dolostone
Permeability: Moderately slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• In areas of these soils, the rooting depth of crops is restricted by bedrock and a high content of clay.
• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soils to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of groundwater contamination.

Pastureland

• These soils provide poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Erosion control is needed when pastures are renovated.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• The rooting depth of plants may be restricted by bedrock.

Woodland

• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• The stickiness of the soils reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the Biglick soil, equipment used for site preparation should be operated only during the drier periods.

Building sites

• Moderate shrinking and swelling of these soils may crack foundations and basement walls.
• Foundations and other structures may require some special design and construction techniques or maintenance.
• The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• Because of the limited depth to bedrock, these soils are generally unsuited to septic tank absorption fields.

Local roads and streets

• Because of shrinking and swelling, these soils may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of the soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• Because of the limited depth to hard bedrock, excavation is difficult in areas of the Biglick soil.
• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads in areas of the Milton soil.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: Biglick—E-1; Milton—F-1
Prime farmland status: Not prime farmland
Hydric soil status: Biglick—not hydric; Milton—not hydric

BnA—Blount loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on end moraines and ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Blount soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Poorly drained soils
• Moderately well drained soils

• Soils that have more sand and less clay in the subsoil than the Blount soil
• Soils that have a surface layer of silt loam or silty clay loam
Contrasting components:
• Pewamo soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 8.6 inches to a depth of 56 inches
Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• The rooting depth of crops may be restricted by the high content of clay.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
• The low bearing strength of the soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

BoA—Blount silt loam, 0 to 2 percent slopes

Setting

Landform: Rises and flats on end moraines and ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 150 acres

Map Unit Composition

Blount soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Poorly drained soils
• Soils that have less clay in the substratum than the Blount soil
• Soils that have a surface layer of loam or silty clay loam
• Soils that have more sand and less clay in the subsoil than the Blount soil
• Soils that have slopes of 2 to 4 percent
• Moderately well drained soils
• Soils that formed in glaciolacustrine sediments
Contrasting components:
• Pewamo soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 7.7 inches to a depth of 55 inches
Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table (fig. 7).
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Figure 7.—Installation of a subsurface drainage system in an area of Blount silt loam, 0 to 2 percent slopes.

• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly

measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The low bearing strength of the soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

BoB—Blount silt loam, 2 to 4 percent slopes

Setting

Landform: Knolls on end moraines and ground moraines
Position on the landform: Shoulders, backslopes, summits
Size of areas: 5 to 100 acres

Map Unit Composition

Blount soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Soils that have more sand and less clay in the subsoil and substratum than the Blount soil
- Soils that have slopes of 0 to 2 percent
- Eroded soils that have a surface layer of silty clay loam
- Moderately well drained soils that have slopes of 6 to 8 percent

Contrasting components:
- Pewamo soils in drainageways (4 percent)
- Moderately well drained soils that have slopes of 8 to 12 percent (1 percent)

Soil Properties and Qualities

Available water capacity: About 6.9 inches to a depth of 45 inches
Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A subsurface drainage system helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
• The low bearing strength of the soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

BpA—Blount-Houcktown complex, 0 to 3 percent slopes

Setting

Landform: Rises on ground moraines, disintegration moraines, and end moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 35 acres

Map Unit Composition

Blount soil and similar components: 60 percent
Houcktown soil and similar components: 35 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam
• Loamy soils that have till at a depth of 40 to 60 inches
• Soils that have a surface layer of fine sandy loam
• Soils that have more sand and less clay in the subsoil and substratum
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Blount

Available water capacity: About 6.8 inches to a depth of 43 inches

Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Houcktown

Available water capacity: About 6.4 inches to a depth of 52 inches
Cation-exchange capacity in the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 35 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy, water-sorted deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops grown in areas of these soils may be damaged by frost action.
• The rooting depth of crops may be restricted by the high content of clay in the Blount soil.
• A subsurface drainage system helps to lower the seasonal high water table in areas of the Bount soil.
• In areas of the Blount soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
• Systematic subsurface drainage will extend the period of planting and harvesting crops in areas of the Houcktown soil.

Pastureland

• The root system of plants grown in areas of these soils may be damaged by frost action.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted in areas of the Blount soil.

Woodland

• Soil wetness may limit the operation of logging trucks in areas of these soils.
• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• The seasonal high water table in areas of the Blount soil can inhibit the growth of seedlings of some species by reducing root respiration.
• The stickiness of the Blount soil reduces the efficiency of mechanical planting equipment.

Building sites

• These soils are poorly suited to building site development.
• The seasonal high water table in areas of these soils may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum of the soils increases the difficulty of digging and compacting the soil material in shallow excavations.

• In some areas of the Blount soil, the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of these soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• In areas of these soils, local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table in areas of the soils affects the ease of excavation and grading and reduces the bearing capacity.
• Because of shrinking and swelling, this Blount soil may not be suitable for use as base material for local roads and streets.
• The low bearing strength of the Blount soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: Blount—C-1; Houcktown—A-6
Prime farmland status: Prime farmland where drained
Hydric soil status: Blount—not hydric; Houcktown—not hydric

BrA—Blount-Jenera complex, 0 to 3 percent slopes

Setting

Landform: Rises on ground moraines and disintegration moraines
Position on the landform: Shoulders, summits
Size of areas: 3 to 20 acres

Map Unit Composition

Blount soil and similar components: 55 percent
Jenera soil and similar components: 40 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam
• Loamy, somewhat poorly drained soils
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Blount

Available water capacity: About 7.6 inches to a depth of 52 inches
Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Jenera

Available water capacity: About 6.8 inches to a depth of 44 inches
Cation-exchange capacity in the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the subsoil, moderately slow in the next part of the

subsoil, and slow or very slow in the lower part of the subsoil and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• In areas of this Blount soil, the rooting depth of crops may be restricted by the high content of clay.
• A subsurface drainage system helps to lower the seasonal high water table in areas of the Blount soil.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains in areas of the Blount soil.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion in areas of the Jenera soil.
• Systematic subsurface drainage will extend the period of planting and harvesting crops in areas of the Jenera soil.

Pastureland

• The root system of plants may be damaged by frost action.
• In areas of the Blount soil, excess water should be removed or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland

• Soil wetness may limit the operation of logging trucks in areas of these soils.
• The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The seasonal high water table in areas of the Blount soil can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the Blount soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate in areas of the Blount soil and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the Blount soil reduces the efficiency of mechanical planting equipment.

Building sites

• These soils are poorly suited to building site development.
• The seasonal high water table in areas of the soils may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas of the soils, the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• Moderate shrinking and swelling in areas of the Blount soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas of the Blount soil, the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of these soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of these soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table in areas of these soils affects the ease of excavation and grading and reduces the bearing capacity of the soils.
• The low bearing strength of the soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• Because of shrinking and swelling, this Blount soil may not be suitable for use as base material for local roads and streets.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: Blount—C-1; Jenera—A-6
Prime farmland status: Prime farmland where drained

Hydric soil status: Blount—not hydric; Jenera—not hydric

BuA—Blount-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Rises and flats on ground moraines and end moraines
Position on the landform: Shoulders, summits
Size of areas: 5 to 50 acres

Map Unit Composition

Blount soil and similar components: 50 percent
Urban land and similar components: 40 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils that have till below a depth of 40 inches
- Soils that have more sand and less clay in the subsoil and substratum than the Blount soil
- Moderately well drained soils
- Soils that have a surface layer of loam

Contrasting components:
- Pewamo soils in depressions and drainageways (6 percent)
- Udorthents in areas adjacent to buildings and streets (4 percent)

Soil Properties and Qualities

Blount

Available water capacity: About 6.6 inches to a depth of 42 inches
Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Urban land

- In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
- Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

- This Blount soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of this soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this Blount soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this Blount soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
- The low bearing strength of the soil is generally unfavorable for supporting heavy loads. Special

design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Blount—not hydric; Urban land—not ranked

ChC—Channahon-Biglick complex, 6 to 12 percent slopes

Setting

Landform: Knolls on monadnocks on ground moraines
Position on the landform: Backslopes, shoulders
Size of areas: 50 to 100 acres

Map Unit Composition

Channahon soil and similar components: 55 percent
Biglick soil and similar components: 40 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam or silty clay loam
• Soils that have bedrock at a depth of 20 to 40 inches
Contrasting components:
• Outcrops of limestone bedrock in similar landscape positions (3 percent)
• Soils that have bedrock at a depth of 4 to 10 inches and are in similar landscape positions (2 percent)

Soil Properties and Qualities

Channahon

Available water capacity: About 2.5 inches to a depth of 13 inches
Cation-exchange capacity in the surface layer: 12 to 24 milliquivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 1.1 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy drift over limestone or dolostone
Permeability: Moderate
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Biglick

Available water capacity: About 2.1 inches to a depth of 12 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 1.0 foot
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Thin layer of drift over clayey residuum derived from limestone or dolostone
Permeability: Moderately slow or slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Use and Management

Cropland

• The rooting depth of crops is restricted by bedrock in areas of the Channahon soil and by bedrock and a high content of clay in areas of the Biglick soil.
• Applying a system of conservation tillage and planting cover crops in areas of these soils reduce the runoff rate and help to minimize soil loss by erosion.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• These soils provide poor summer pasture.

• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• The rooting depth of plants may be restricted by bedrock.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Avoiding overgrazing can reduce the hazard of erosion.
• Erosion control is needed when pastures are renovated.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of these soils may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
• The slope may restrict the use of some mechanical planting equipment.
• Rock fragments obstruct the use of mechanical planting equipment in areas of the Channahon soil.
• The stickiness of the Biglick soil reduces the efficiency of mechanical planting equipment. Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.

Building sites

• Moderate shrinking and swelling of these soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
• In some areas the high content of clay in the subsoil of the Biglick soil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
• The low bearing strength of the Biglick soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Septic tank absorption fields

• Because of the limited depth to bedrock, these soils are generally unsuited to septic tank absorption fields.

Local roads and streets

• Because of the limited depth to hard bedrock, excavation is difficult.
• Because of shrinking and swelling, these soils may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of the slope, designing local roads and streets is difficult.
• The low bearing strength of the Biglick soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 4e
Pasture and hayland suitability group: Channahon—E-1; Biglick—E-1
Prime farmland status: Not prime farmland
Hydric soil status: Channahon—not hydric; Biglick—not hydric

CoA—Colwood loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 5 to 30 acres

Map Unit Composition

Colwood soil and similar components: 80 percent
Contrasting components: 20 percent

Minor Components

Similar components:
• Soils that have till at a depth of 60 to 80 inches
• Soils that have more clay and less sand in the subsoil than the Colwood soil

• Soils having a dark surface layer that is less than 10 inches thick
• Soils that have more rock fragments in the subsoil and substratum than the Colwood soil

Contrasting components:
• Darroch soils on rises (10 percent)
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (10 percent)

Soil Properties and Qualities

Available water capacity: About 12 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 32 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Very brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 8 percent
Parent material: Stratified glaciolacustrine deposits
Permeability: Moderate or moderately slow in the solum and moderate in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Ponding is a hazard affecting the safe use of logging trucks on roads.

Building sites

• This soil is generally unsuited to building site development.
• Because water tends to pond on the soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

CtA—Cygnet loam, 0 to 2 percent slopes

Setting

Landform: Rises on longshore bars and beach ridges on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Cygnet soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils that have till below a depth of 60 inches
- Soils that have a surface layer of fine sandy loam
- Soils that have more sand and less clay in the subsoil than the Cygnet soil
- Soils that have more rock fragments in the upper part of the substratum than the Cygnet soil
- Somewhat poorly drained soils that have till at a depth of 20 to 40 inches
- Well drained soils

Contrasting components:
- Alvada soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 8.4 inches to a depth of 53 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum and in the upper part of the substratum, and slow or very slow in the lower part of the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Systematic subsurface drainage will extend the periods for planting and harvesting crops.

Pastureland

- The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- Rock fragments obstruct the use of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability and the seasonal high water table limit the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

CuA—Cygnet-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Rises on beach ridges and longshore bars on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 30 acres

Map Unit Composition

Cygnet soil and similar components: 50 percent
Urban land and similar components: 40 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of fine sandy loam
• Soils that have more sand and less clay in the subsoil than the Cygnet soil
• Soils that have more rock fragments in the upper part of the substratum than the Cygnet soil
• Somewhat poorly drained soils that have till at a depth of 20 to 40 inches
• Soils having a darker surface layer than that of the Cygnet soil
Contrasting components:
• Alvada soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Cygnet

Available water capacity: About 9.1 inches to a depth of 57 inches
Cation-exchange capacity in the surface layer: 7 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum and in the upper part of the substratum, and slow or very slow in the lower part of the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Cygnet soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this Cygnet soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this Cygnet soil.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Cygnet—not hydric; Urban land—not ranked

DbA—Darroch loam, 0 to 2 percent slopes

Setting

Landform: Rises and flats on lake plains and outwash plains
Position on the landform: Summits
Size of areas: 5 to 50 acres

Map Unit Composition

Darroch soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils having a surface layer that is less than 10 inches thick
• Soils having a lighter colored surface layer than that of the Darroch soil
• Moderately well drained soils having a lighter colored surface layer than that of the Darroch soil
• Soils that have till at a depth of 60 to 80 inches
Contrasting components:
• Colwood soils in depressions and drainageways (8 percent)
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 24 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Stratified loamy and silty deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

DeA—Del Rey silt loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 30 acres

Map Unit Composition

Del Rey soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
- Soils that have a surface layer of silty clay loam
- Soils that have more clay in the lower part of the subsoil and in the substratum than the Del Rey soil
- Moderately well drained soils

Contrasting components:
- Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (10 percent)
- Patton soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 8.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Glaciolacustrine deposits
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- Maintaining or increasing the content of organic matter in this soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A subsurface drainage system helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of the soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soil.
• The low bearing strength of the soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

DfA—Del Rey-Blount complex, 0 to 3 percent slopes

Setting

Landform: Flats and rises on disintegration moraines
Position on the landform: Summits, shoulders
Size of areas: 3 to 20 acres

Map Unit Composition

Del Rey soil and similar components: 55 percent
Blount soil and similar components: 40 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have more clay in the substratum
• Soils that have more sand and less clay in the subsoil
• Moderately well drained soils
• Soils that have a surface layer of loam
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Del Rey

Available water capacity: About 9.1 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 foot to 2.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Glaciolacustrine deposits
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Blount

Available water capacity: About 6.7 inches to a depth of 44 inches
Cation-exchange capacity in the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam

Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A subsurface drainage system helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soils increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soils reduces the efficiency of mechanical planting equipment.

Building sites

- These soils are poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas of the Blount soil, the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
- In other areas of the Blount soil, the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of these soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of the soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, these soils may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of the soils.
- The low bearing strength of the soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: Del Rey—C-1; Blount—C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Del Rey—not hydric; Blount—not hydric

DuB—Dunbridge loamy fine sand, 1 to 4 percent slopes

Setting

Landform: Rises and knolls on monadnocks on ground moraines

Position on the landform: Backslopes, shoulders, summits
Size of areas: 3 to 15 acres

Map Unit Composition

Dunbridge soil and similar components: 100 percent

Minor Components

Similar components:
• Moderately well drained, sandy soils that have bedrock at a depth of 40 to 60 inches
• Soils that have more sand and less clay in the subsoil than the Dunbridge soil
• Soils that have a surface layer of fine sandy loam
• Soils that have bedrock at a depth of 40 to 60 inches
• Soils having a lighter colored surface layer than that of the Dunbridge soil

Soil Properties and Qualities

Available water capacity: About 3.4 inches to a depth of 25 inches
Cation-exchange capacity in the surface layer: 6 to 13 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 2.1 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy drift overlying limestone or dolostone
Permeability: Moderately rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Potential for surface runoff: High
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

• The rooting depth of crops is restricted by bedrock.
• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• The rooting depth of plants may be restricted by bedrock.
• Erosion control is needed when pastures are renovated.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• Rock fragments obstruct the use of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields

• Because of the limited depth to bedrock, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3s
Pasture and hayland suitability group: F-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

EmA—Elliott silt loam, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Summits
Size of areas: 5 to 50 acres

Map Unit Composition

Elliott soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils that have a surface layer of silty clay loam or loam
- Soils having a thicker subsoil than that of the Elliott soil
- Soils having a lighter colored surface layer than that of the Elliott soil
- Soils that have more sand and less clay in the subsoil than the Elliott soil

Contrasting components:
- Pewamo soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 36 inches
Cation-exchange capacity in the surface layer: 18 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 32 to 55 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Till
Permeability: Moderately slow in the upper part of the solum and slow or moderately slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- A subsurface drainage system helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.

• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

FbA—Flatrock loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Rises on flood plains
Size of areas: 5 to 20 acres

Map Unit Composition

Flatrock soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Somewhat poorly drained soils
• Soils that have a surface layer of silt loam
• Well drained soils
• Soils having a darker surface layer than that of the Flatrock soil
• Soils that have till at a depth of 60 to 80 inches
Contrasting components:
• Sloan soils in backswamps (5 percent)

Soil Properties and Qualities

Available water capacity: About 11.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding duration: Very brief
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.

• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• The flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings.
• This soil is generally unsuited to homesite development. Special design of some structures, such as farm outbuildings, may be needed to prevent the damage caused by flooding.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• The flooding greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

FcA—Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Natural levees, rises, and flats on flood plains
Size of areas: 5 to 200 acres or more

Map Unit Composition

Flatrock soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Flatrock soil
• Soils that have a surface layer of loam
• Somewhat poorly drained soils
• Soils that have till at a depth of 60 to 80 inches
• Well drained soils
Contrasting components:
• Sloan soils in backswamps (10 percent)

Soil Properties and Qualities

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings.
• This soil is generally unsuited to homesite development. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• Flooding greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

FdA—Flatrock silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Natural levees, rises, and flats on flood plains
Size of areas: 5 to 75 acres

Map Unit Composition

Flatrock soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Flatrock soil
• Soils that have a surface layer of loam
• Somewhat poorly drained soils
• Soils that have bedrock at a depth of 40 to 60 inches

• Well drained soils
• Soils that have bedrock at a depth of 80 to 120 inches

Contrasting components:

• Sloan soils in backswamps (5 percent)

Soil Properties and Qualities

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 9 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to bedrock (lithic)
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Alluvium overlying limestone or dolostone
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings.
• This soil is generally unsuited to homesite development. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

FoA—Fox loam, 0 to 2 percent slopes

Setting

Landform: Rises and flats on beach ridges on lake plains and on outwash plains and moraines
Position on the landform: Shoulders, summits
Size of areas: 5 to 20 acres

Map Unit Composition

Fox soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils that have a surface layer of sandy loam
- Soils with a thicker subsoil than that of the Fox soil
- Soils that have less clay and more sand in the subsoil than the Fox soil
- Soils that have slopes ranging from 2 to 6 percent
- Soils that have till at a depth of 60 to 80 inches

Contrasting components:
- Somewhat poorly drained soils on footslopes (10 percent)

Soil Properties and Qualities

Available water capacity: About 5.9 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 16 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy deposits or beach deposits overlying stratified sandy and gravelly material
Permeability: Moderate in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

- This soil provides poor summer pasture.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

- The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- Rock fragments obstruct the use of mechanical planting equipment.

Building sites

- This soil is well suited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The excessive permeability in the lower part of the soil limits the proper treatment of the effluent from septic tank absorption fields in areas of the soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2s
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

FoB—Fox loam, 2 to 6 percent slopes

Setting

Landform: Knolls on beach ridges on lake plains and on outwash plains and moraines
Position on the landform: Shoulders, backslopes, summits
Size of areas: 5 to 75 acres

Map Unit Composition

Fox soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have less clay and more sand in the subsoil than the Fox soil
• Soils that have a surface layer of sandy loam
• Soils with a thicker subsoil than that of the Fox soil
• Soils that have till at a depth of 60 to 80 inches
Contrasting components:
• Somewhat poorly drained soils at the base of slopes and in depressions (7 percent)
• Vaughnsville soils on footslopes (3 percent)

Soil Properties and Qualities

Available water capacity: About 6.8 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 16 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy deposits or beach deposits overlying stratified sandy and gravelly material
Permeability: Moderate in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of this soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Rock fragments obstruct the use of mechanical planting equipment.

Building sites

• This soil is well suited to building site development.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The excessive permeability in the lower part of the soil limits the proper treatment of the effluent from septic tank absorption fields in areas of the soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

FoC2—Fox loam, 6 to 12 percent slopes, eroded

Setting

Landform: Knolls on beach ridges on lake plains and on outwash plains
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Fox soil and similar components: 100 percent

Minor Components

Similar components:
• Soils that have less clay and more sand in the subsoil than the Fox soil
• Soils that have a surface layer of sandy loam
• Soils with a thicker subsoil than that of the Fox soil
• Soils that have till at a depth of 60 to 80 inches

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 16 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Loamy deposits or beach deposits overlying stratified sandy and gravelly material
Permeability: Moderate in the solum and rapid or very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Avoiding overgrazing can reduce the hazard of erosion.
• Erosion control is needed when pastures are renovated.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
• The slope may restrict the use of some mechanical planting equipment.
• Rock fragments obstruct the use of mechanical planting equipment.

• Burning may destroy organic matter.

Building sites

• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
• The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The excessive permeability in the lower part of this soil limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of the slope, designing local roads and streets is difficult.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-1
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

FsA—Fulton silt loam, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Shoulders, summits
Size of areas: 5 to 30 acres

Map Unit Composition

Fulton soil and similar components: 80 percent
Contrasting components: 20 percent

Minor Components

Similar components:
• Poorly drained soils
• Soils that have a surface layer of silty clay loam
• Soils that have less clay in the substratum than the Fulton soil
• Soils that have more sand and less clay in the subsoil than the Fulton soil
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Toledo soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 7.4 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Glaciolacustrine deposits
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing

pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• Special design of structures is needed to prevent the damage caused by wetness.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-2
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

FtA—Fulton silt loam, till substratum, 0 to 2 percent slopes

Setting

Landform: Rises on disintegration moraines
Position on the landform: Shoulders, summits
Size of areas: 2 to 35 acres

Map Unit Composition

Fulton soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Poorly drained soils
• Soils that have till at a depth of more than 80 inches
• Moderately well drained soils
• Soils that have a surface layer of silty clay loam
• Soils that have less clay in the substratum than the Fulton soil
• Soils that have till at a depth of less than 60 inches
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 7.5 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 10 to 22 milliquivalents per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Glaciolacustrine deposits overlying till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-2

Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

GaB—Gallman loam, 2 to 6 percent slopes

Setting

Landform: Knolls in outwash areas on end moraines and ground moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 30 acres

Map Unit Composition

Gallman soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of sandy loam or fine sandy loam
• Soils that have till at a depth of 60 to 80 inches
• Soils that have less clay and more sand in the subsoil than the Gallman soil
Contrasting components:
• Somewhat poorly drained soils at the base of slopes and in seepy areas (10 percent)

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 6 to 21 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Poorly sorted outwash
Permeability: Moderately rapid in the solum and moderately rapid or rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

Pastureland

• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Rock fragments obstruct the use of mechanical planting equipment.

Building sites

• This soil is well suited to building site development.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The excessive permeability limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

GfA—Gilford mucky loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on outwash plains
Size of areas: 5 to 30 acres

Map Unit Composition

Gilford soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils having a dark surface layer that is less than 10 inches thick
- Soils having a thicker solum with more clay and less sand than the Gilford soil
- Soils that have a surface layer of fine sandy loam
- Soils that have more rock fragments in the substratum than the Gilford soil

Contrasting components:
- Somewhat poorly drained soils on rises (7 percent)
- Ottokee soils on rises (3 percent)

Soil Properties and Qualities

Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity in the surface layer: 24 to 52 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Very brief
Depth of ponding: 0.0 to 0.5 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 10 to 20 percent
Parent material: Loamy and sandy deposits
Permeability: Moderately rapid in the upper part of the solum and rapid in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Mucky loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

- Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- Ponding is a hazard affecting the safe use of logging trucks on roads.

Building sites

- This soil is generally unsuited to building site development.
- Because water tends to pond on the soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

- Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3w

Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

GmA—Glynwood loam, limestone substratum, 0 to 2 percent slopes

Setting

Landform: Rises on monadnocks on ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 30 acres

Map Unit Composition

Glynwood soil and similar components: 100 percent

Minor Components

Similar components:
- Somewhat poorly drained soils
- Well drained soils
- Soils that have more sand and less clay in the subsoil than the Glynwood soil
- Soils that have bedrock at a depth of 40 to 60 inches
- Soils that have a surface layer of silt loam

Soil Properties and Qualities

Available water capacity: About 6.5 inches to a depth of 40 inches
Cation-exchange capacity in the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material; 60 to 80 inches to bedrock (lithic)
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high content of clay.
- Systematic subsurface drainage will extend the period of planting and harvesting crops.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of

the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.
• The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

GnB—Glynwood silt loam, 2 to 6 percent slopes

Setting

Landform: Dissected areas and knolls on end moraines and ground moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 50 acres

Map Unit Composition

Glynwood soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Eroded soils that have a surface layer of clay loam or silty clay loam
• Soils that have a surface layer of loam
• Soils that have more sand and less clay in the subsoil and substratum than the Glynwood soil
• Somewhat poorly drained soils
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 7.5 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

GpB2—Glynwood silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected areas and knolls on ground moraines and end moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 50 acres

Map Unit Composition

Glynwood soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Uneroded soils that have a surface layer of silt loam
- Soils that have slopes ranging from 6 to 12 percent
- Soils that have more sand and less clay in the subsoil and substratum than the Glynwood soil
- Somewhat poorly drained soils

Contrasting components:
- Pewamo soils in depressions and drainageways (5 percent)
- Severely eroded soils that have carbonates at a depth of less than 16 inches and are in landscape positions similar to those of the Glynwood soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 40 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched

Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• The root system of winter grain crops may be damaged by frost action.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

GpC2—Glynwood silty clay loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected areas and knolls on ground moraines and end moraines
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 40 acres

Map Unit Composition

Glynwood soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have slopes ranging from 12 to 18 percent
• Soils that have more sand and less clay in the subsoil and substratum than the Glynwood soil
• Somewhat poorly drained soils
• Soils that have a surface layer of loam or silt loam
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)
• Severely eroded soils that have carbonates at a depth of less than 16 inches and are in landscape positions similar to those of the Glynwood soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.3 inches to a depth of 41 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• The root system of winter grain crops may be damaged by frost action.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Avoiding overgrazing can reduce the hazard of erosion.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.

• The slope may restrict the use of some mechanical planting equipment.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of the slope, designing local roads and streets is difficult.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 4e
Pasture and hayland suitability group: A-6
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

GsB—Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes

Setting

Landform: Knolls on disintegration moraines
Position on the landform: Backslopes, summits, shoulders
Size of areas: 3 to 50 acres

Map Unit Composition

Glynwood soil and similar components: 40 percent
Blount soil and similar components: 35 percent
Houcktown soil and similar components: 15 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam
• Soils that have a surface layer of fine sandy loam
• Soils that have till at a depth of 40 to 80 inches
Contrasting components:
• Pewamo soils in depressions and drainageways (7 percent)
• Sandy, moderately well drained soils on the crest of knolls (3 percent)

Soil Properties and Qualities

Glynwood

Available water capacity: About 7.2 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained

Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Blount

Available water capacity: About 6.9 inches to a depth of 44 inches
Cation-exchange capacity of the surface layer: 13 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 30 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Houcktown

Available water capacity: About 6.4 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 35 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy, water-sorted deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action in areas of the Glynwood, Blount, and Houcktown soils.
- A subsurface drainage system in areas of these soils helps to lower the seasonal high water table.
- Grassed waterways can be used in some areas of the Glynwood and Houcktown soils to slow and direct the movement of water and reduce the hazard of erosion.
- In areas of the Glynwood and Houcktown soils, applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- In areas of the Glynwood and Blount soils, including deep-rooted cover crops in the rotation helps to improve soil structure and provide pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The rooting depth of crops may be restricted by the high content of clay in the Glynwood and Blount soils.
- Clods may form if the Glynwood soil is tilled when wet.
- Controlling traffic in areas of the Glynwood soil can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the Glynwood soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

- The root system of plants may be damaged by frost action in areas of the Glynwood, Blount, and Houcktown soils.
- Erosion control is needed when pastures are renovated in areas of the Glynwood and Houcktown soils.
- In areas of the Blount soil, excess water should be removed or grass or legume species that are adapted to wet soil conditions should be planted.

Woodland

- Soil wetness may limit the operation of logging trucks in areas of the Glynwood, Blount, and Houcktown soils.

• The low strength of these soils increases the cost of constructing haul roads and log landings.
• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• Because of low soil strength, harvesting equipment may be difficult to operate in areas of these soils and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• The stickiness of the Glynwood and Blount soils reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter in areas of the Glynwood soil.
• The seasonal high water table in areas of the Blount soil can inhibit the growth of seedlings of some species by reducing root respiration.

Building sites

• The Glynwood, Blount, and Houcktown soils are poorly suited to building site development.
• The seasonal high water table in these soils may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas, the dense nature of the substratum in these soils increases the difficulty of digging and compacting the soil material in shallow excavations.
• Moderate shrinking and swelling of the Glynwood and Blount soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the high content of clay in the subsoil of the Glynwood and Blount soils increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of the Glynwood, Blount, and Houcktown soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of these soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• The seasonal high water table in areas of the Glynwood, Blount, and Houcktown soils affects the ease of excavation and grading and reduces the bearing capacity of the soils.
• Local roads and streets built in areas of these soils may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of shrinking and swelling, the Glynwood and Blount soils may not be suitable for use as base material for local roads and streets.
• The low bearing strength of the Glynwood and Blount soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: Glynwood—A-6; Blount—C-1; Houcktown—A-6
Prime farmland status: Prime farmland
Hydric soil status: Glynwood—not hydric; Blount—not hydric; Houcktown—not hydric

GuB—Glynwood-Urban land complex, 2 to 6 percent slopes

Setting

Landform: Knolls and dissected areas on ground moraines and end moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 3 to 200 acres or more

Map Unit Composition

Glynwood soil and similar components: 55 percent
Urban land and similar components: 35 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of loam
• Soils that have till at a depth of 40 to 60 inches
• Soils that have more sand and less clay in the subsoil than the Glynwood soil
• Somewhat poorly drained soils
Contrasting components:
• Pewamo soils in depressions and drainageways (7 percent)

• Udorthents in areas adjacent to buildings and streets (3 percent)

Soil Properties and Qualities

Glynwood

Available water capacity: About 7.8 inches to a depth of 49 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Glynwood soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Glynwood—not hydric; Urban land—not ranked

HaA—Harrod silt loam, 0 to 1 percent slopes, frequently flooded

Setting

Landform: Natural levees and flats on flood plains
Size of areas: 5 to 20 acres

Map Unit Composition

Harrod soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils having a lighter colored surface layer than that of the Harrod soil

• Soils that have bedrock at a depth of 40 to 60 inches
• Well drained soils
• Soils that have a surface layer of loam

Contrasting components:
• Poorly drained and very poorly drained soils in backswamps (10 percent)

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 33 inches
Cation-exchange capacity of the surface layer: 13 to 28 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Alluvium overlying limestone or dolostone
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The rooting depth of crops is restricted by bedrock.
• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.
• Winter grain crops are commonly not grown because of frequent flooding.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• A subsurface drainage system helps to lower the seasonal high water table.
• The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• The root system of plants may be damaged by frost action.
• The rooting depth of plants may be restricted by bedrock.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• This soil is generally unsuited to building site development because of the flooding.
• The frequent flooding in areas of this soil greatly increases the risk of damage associated with floodwaters.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields because of the flooding and the limited depth to bedrock.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: F-1
Prime farmland status: Prime farmland where protected from flooding or not frequently flooded during the growing season
Hydric soil status: Not hydric

HkA—Haskins fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Shoulders, summits
Size of areas: 3 to 20 acres

Map Unit Composition

Haskins soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Haskins soil
• Soils that have till at a depth of 40 to 60 inches
• Moderately well drained soils
• Soils that have more clay and less sand in the subsoil than the Haskins soil
• Soils that have a surface layer of loam
Contrasting components:
• Mermill soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 54 inches
Cation-exchange capacity of the surface layer: 5 to 15 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 2 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: High
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• The root system of winter grain crops may be damaged by frost action.
• The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

• A loss of soil productivity may occur after a fire.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

HnA—Haskins loam, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Shoulders, summits
Size of areas: 5 to 25 acres

Map Unit Composition

Haskins soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Haskins soil
• Soils that have a surface layer of fine sandy loam or sandy loam
• Moderately well drained soils
• Soils that have more clay and less sand in the subsoil than the Haskins soil
• Soils that have till at a depth of 40 to 60 inches
Contrasting components:
• Mermill soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.9 inches to a depth of 52 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

HpA—Houcktown loam, 0 to 2 percent slopes

Setting

Landform: Rises on end moraines, ground moraines, and lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 20 acres

Map Unit Composition

Houcktown soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Houcktown soil
• Soils that have a surface layer of fine sandy loam or sandy loam
• Somewhat poorly drained soils
• Soils that have more clay and less sand in the subsoil than the Houcktown soil
• Soils that have till at a depth of 40 to 60 inches
Contrasting components:
• Pewamo soils in depressions (4 percent)
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (1 percent)

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 51 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 35 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy, water-sorted deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Systematic subsurface drainage will extend the period of planting and harvesting crops.

Pastureland

• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

HpB—Houcktown loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains, ground moraines, and end moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 35 acres

Map Unit Composition

Houcktown soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of fine sandy loam or sandy loam
• Soils that have till at a depth of 40 to 60 inches
• Soils having more clay and less sand in the subsoil than the Houcktown soil
• Somewhat poorly drained soils
Contrasting components:
• Pewamo soils in depressions and drainageways (6 percent)
• Mermill soils in depressions and drainageways (3 percent)
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (1 percent)

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 50 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 35 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None

Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy, water-sorted deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• The root system of winter grain crops may be damaged by frost action.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

HrB—Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes

Setting

Landform: Knolls on disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 3 to 20 acres

Map Unit Composition

Houcktown soil and similar components: 40 percent
Glynwood soil and similar components: 30 percent
Jenera soil and similar components: 25 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Sandy, moderately well drained soils
• Soils that have till at a depth of 60 to 80 inches

• Soils that have a surface layer of silt loam or loamy fine sand
• Somewhat poorly drained soils
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Houcktown

Available water capacity: About 5.4 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 35 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy, water-sorted deposits and the underlying till
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Glynwood

Available water capacity: About 7.2 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Jenera

Available water capacity: About 9.3 inches to a depth of 58 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits and the underlying till
Permeability: Moderate in the loamy part of the solum, moderately slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management

Cropland

• The root system of winter grain crops may be damaged by frost action in areas of the Houcktown, Glynwood, and Jenera soils.
• Grassed waterways can be used in some areas of these soils to slow and direct the movement of water and reduce the hazard of erosion.
• In areas of these soils, applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• A subsurface drainage system helps to lower the seasonal high water table in areas of these soils.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the Houcktown soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Clods may form if the Glynwood soil is tilled when wet.
• Controlling traffic can minimize soil compaction in areas of the Glynwood soil.

• The rooting depth of crops may be restricted by the high content of clay in the Glynwood soil.
• Maintaining or increasing the content of organic matter in the Glynwood soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• In areas of the Glynwood soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion in areas of the Jenera soil.

Pastureland

• Erosion control is needed when pastures are renovated in areas of the Houcktown, Glynwood, and Jenera soils.
• The root system of plants may be damaged by frost action in areas of these soils.
• This Houcktown soil provides poor summer pasture.
• In areas of the Houcktown soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture in areas of the Houcktown soil.

Woodland

• Soil wetness may limit the operation of logging trucks in areas of the Houcktown, Glynwood, and Jenera soils.
• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the Houcktown and Glynwood soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength in areas of the Houcktown and Glynwood soils, harvesting equipment may be difficult to operate and damage may result. The low strength of these soils may create unsafe conditions for the operation of logging trucks.
• The stickiness of the Glynwood soil reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter in areas of the Glynwood soil.

Building sites

• The Houcktown, Glynwood, and Jenera soils are poorly suited to building site development.
• In some areas the dense nature of the substratum in these soils increases the difficulty of digging and compacting the soil material in shallow excavations.
• The seasonal high water table in areas of these soils may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the Houcktown and Glynwood soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the high content of clay in the subsoil of the Glynwood soil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of the Houcktown, Glynwood, and Jenera soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of these soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• In areas of the Houcktown, Glynwood, and Jenera soils, local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table in areas of these soils affects the ease of excavation and grading and reduces the bearing capacity of the soils.
• Because of shrinking and swelling, the Houcktown and Glynwood soils may not be suitable for use as base material for local roads and streets.
• The low bearing strength of the Houcktown and Glynwood soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength in areas of the Jenera soil.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: Houcktown—A-6; Glynwood—A-6; Jenera—A-6
Prime farmland status: Prime farmland
Hydric soil status: Houcktown—not hydric; Glynwood—not hydric; Jenera—not hydric

HsA—Hoytville silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 25 to 100 acres

Map Unit Composition

Hoytville soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Soils that have more sand and less clay in the subsoil than the Hoytville soil
- Soils having a dark surface layer that is more than 10 inches thick
- Soils having a lighter colored surface layer
- Soils that have a surface layer of silty clay or clay

Contrasting components:
- Nappanee soils on rises (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 35 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 65 inches to dense material
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A combination of surface and subsurface drainage systems helps to remove excess water.
- Including deep-rooted cover crops in the rotation helps to improve soil structure and provide pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Ponding is a hazard affecting the safe use of logging trucks on roads.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- This soil is generally unsuited to building site development.
- Because water tends to pond on the soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

HtA—Hoytville silty clay, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: More than a 1,000 acres in most areas; 10 to 100 acres in a few areas

Map Unit Composition

Hoytville soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have a surface layer of silty clay loam or clay
• Soils having a lighter colored surface layer than that of the Hoytville soil
• Soils having a thicker subsoil than that of the Hoytville soil
• Soils having a dark surface layer that is more than 10 inches thick
Contrasting components:
• Nappanee soils on rises (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 24 to 40 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 65 inches to dense material
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Till
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A combination of surface and subsurface drainage systems helps to remove excess water.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Ponding is a hazard affecting the safe use of logging trucks on roads.
• Burning may destroy organic matter.

Building sites

• This soil is generally unsuited to building site development.
• Because water tends to pond on the soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

JeA—Jenera fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Rises on ground moraines and lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 45 acres

Map Unit Composition

Jenera soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
• Soils that have more sand and less clay in the subsoil than the Jenera soil
• Soils that have a surface layer of loam or loamy fine sand
• Soils that have till at a depth of 60 to 80 inches
• Soils having a darker surface layer than that of the Jenera soil
• Somewhat poorly drained soils
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Very poorly drained soils in depressions (5 percent)

Soil Properties and Qualities

Available water capacity: About 8.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits and the underlying till
Permeability: Moderate in the loamy part of the solum and slow or moderately slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• The root system of winter grain crops may be damaged by frost action.
• Systematic subsurface drainage will extend the period of planting and harvesting crops.

Pastureland

• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building sites

• This soil is poorly suited to building site development.
• Special design of structures is needed to prevent the damage caused by wetness.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

JeB—Jenera fine sandy loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains and ground moraines
Position on the landform: Shoulders, backslopes, summits
Size of areas: 5 to 20 acres

Map Unit Composition

Jenera soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have a surface layer of loam or loamy fine sand
• Soils that have more sand and less clay in the subsoil than the Jenera soil
• Somewhat poorly drained soils
• Soils that have till at a depth of 60 to 80 inches
• Soils having a darker surface layer than that of the Jenera soil
Contrasting components:
• Poorly drained soils in depressions (4 percent)
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (1 percent)

Soil Properties and Qualities

Available water capacity: About 9.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits and the underlying till
Permeability: Moderate in the loamy part of the solum and slow or moderately slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam

Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• The root system of winter grain crops may be damaged by frost action.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Erosion control is needed when pastures are renovated.
• The roots of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

JfB—Jenera-Shinrock, till substratum, complex, 1 to 4 percent slopes

Setting

Landform: Knolls on disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 3 to 20 acres

Map Unit Composition

Jenera soil and similar components: 55 percent
Shinrock soil and similar components: 35 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Somewhat poorly drained soils
• Soils that have till at a depth of 20 to 40 inches
• Soils that have more sand and less clay in the subsoil
• Soils that have a surface layer of loam or loamy fine sand
• Eroded soils that have a surface layer of silty clay loam
Contrasting components:
• Pewamo soils in depressions and drainageways (7 percent)
• Rimer soils on knolls (3 percent)

Soil Properties and Qualities

Jenera

Available water capacity: About 7.8 inches to a depth of 59 inches
Cation-exchange capacity of the surface layer: 6 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched

Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the subsoil, moderately slow in the lower part of the subsoil and the upper part of the substratum, and slow or very slow in the lower part of the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Shinrock

Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Glaciolacustrine deposits overlying till
Permeability: Moderately slow in the upper part of the solum, moderate or moderately slow in the lower part of the solum, and slow or very slow in the till
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas of the Jenera and Shinrock soils to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion in areas of these soils.
• The root system of winter grain crops may be damaged by frost action in areas of the Jenera and Shinrock soils.
• A subsurface drainage system helps to lower the seasonal high water table in these soils.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion in areas of the Jenera soil.
• Controlling traffic can minimize soil compaction in areas of the Shinrock soil.
• The rooting depth of crops may be restricted by the high content of clay in the Shinrock soil.
• Maintaining or increasing the content of organic matter in the Shinrock soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• In areas of the Shinrock soil, including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Erosion control is needed when pastures are renovated in areas of the Jenera and Shinrock soils.
• The root system of plants may be damaged by frost action in areas of these soils.

Woodland

• Soil wetness may limit the operation of logging trucks in areas of the Jenera and Shinrock soils.
• The low strength of these soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the Shinrock soil increases the cost of constructing haul roads and log landings.
• Because of the low soil strength of the Shinrock soil, harvesting equipment may be difficult to operate and damage may result. The low strength may create unsafe conditions for the operation of logging trucks.
• The stickiness of the Shinrock soil reduces the efficiency of mechanical planting equipment.

Building sites

• The Jenera and Shinrock soils are poorly suited to building site development.
• The seasonal high water table in areas of these soils may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the Shinrock soil, the resistance to sloughing is reduced

in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability of the Jenera and Shinrock soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of these soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- In areas of the Jenera and Shinrock soils, local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
- The low bearing strength of the soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: Jenera—A-6; Shinrock—A-6
Prime farmland status: Prime farmland
Hydric soil status: Jenera—not hydric; Shinrock—not hydric

JoA—Joliet loam, 0 to 1 percent slopes

Setting

Landform: Depressions, drainageways, and flats on ground moraines and stream terraces
Size of areas: 3 to 15 acres

Map Unit Composition

Joliet soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Randolph soils
- Soils that have a surface layer of silty clay loam or clay loam
- Soils that have less clay in the subsoil than the Joliet soil
- Soils having a dark surface layer that is less than 10 inches thick

Contrasting components:
- Very poorly drained soils that have bedrock at a depth of 40 to 60 inches and are in landscape positions similar to those of the Joliet soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 7.6 inches to a depth of 18 inches
Cation-exchange capacity of the surface layer: 18 to 26 milliquivalents per 100 grams
Depth class: Shallow
Depth to root-restrictive feature: 10 to 20 inches to bedrock (lithic)
Depth to the seasonal high water table: 0 to 1 foot
Kind of water table: Apparent
Ponding: None
Drainage class: Poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 5 percent
Parent material: Loamy drift overlying limestone or dolostone
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- A subsurface drainage system helps to lower the seasonal high water table.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- This soil provides poor summer pasture.

• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• The rooting depth of plants may be restricted by bedrock.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• Rock fragments obstruct the use of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

Septic tank absorption fields

• Because of the limited depth to bedrock and the seasonal high water table, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Because of the limited depth to hard bedrock, excavation is difficult.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 4w
Pasture and hayland suitability group: E-1
Prime farmland status: Not prime farmland
Hydric soil status: Hydric soil

KnA—Knoxdale silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Natural levees, flats, and rises on flood plains
Size of areas: 10 to 50 acres

Map Unit Composition

Knoxdale soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Moderately well drained soils
• Soils that have till at a depth of 60 to 80 inches
• Soils having a darker surface layer than that of the Knoxdale soil
• Soils that have more silt and less sand in the subsoil than the Knoxdale soil
Contrasting components:
• Sloan soils in backswamps (5 percent)
• Somewhat poorly drained soils on flats and in backswamps (5 percent)

Soil Properties and Qualities

Available water capacity: About 11.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 9 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches

Depth to the seasonal high water table: 3.5 to 6.0 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Alluvium
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Flooding in winter and spring may damage small grain crops.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- Flooding is a hazard affecting the safe use of logging trucks on roads.
- Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

- This soil is generally unsuited to homesite development.
- Under normal weather conditions, this soil is subject to occasional flooding.
- The flooding may result in physical damage and costly repairs to buildings.
- Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

- This soil is generally unsuited to septic tank absorption fields.
- The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

- Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

LbA—Lamberjack loam, 0 to 2 percent slopes

Setting

Landform: Rises on outwash plains and in outwash areas on end moraines and ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Lamberjack soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
- Soils that have till below a depth of 80 inches
- Soils that have a surface layer of sandy loam
- Soils having a darker surface layer than that of the Lamberjack soil
- Moderately well drained soils

Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Alvada soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 8.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 24 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy, sandy, and gravelly outwash overlying till
Permeability: Moderate in the loamy solum, rapid in the gravelly and sandy substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The excessive permeability in the gravelly and sandy substratum limits the proper treatment of the effluent from septic tank absorption fields. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

LcA—Lamberjack-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Rises on outwash plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 200 acres

Map Unit Composition

Lamberjack soil and similar components: 40 percent
Urban land and similar components: 35 percent
Contrasting components: 25 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Lamberjack soil
• Moderately well drained soils
• Soils that have till at a depth of 40 to 60 inches
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (15 percent)
• Alvada soils in depressions and drainageways (5 percent)
• Udorthents in areas adjacent to buildings and streets (5 percent)

Soil Properties and Qualities

Lamberjack
Available water capacity: About 8.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 24 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Loamy, sandy, and gravelly outwash overlying till
Permeability: Moderate in the loamy solum, rapid in the gravelly and sandy substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Lamberjack soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in this Lamberjack soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability in the upper part of this Lamberjack soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The excessive permeability in the gravelly and sandy substratum limits the proper treatment of the effluent from septic tank absorption fields. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• The seasonal high water table in areas of the Lamberjack soil affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Lamberjack—not hydric; Urban land—not ranked

LuB2—Lucas silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Knolls in dissected areas on lake plains; a few areas on disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 15 acres

Map Unit Composition

Lucas soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Somewhat poorly drained soils
• Soils that have more sand and less clay in the subsoil than the Lucas soil
• Uneroded soils that have a surface layer of silt loam
• Soils that have till at a depth of 60 to 80 inches
Contrasting components:
• Poorly drained soils in drainageways and seepy areas (5 percent)

Soil Properties and Qualities

Available water capacity: About 7.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 30 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Glaciolacustrine deposits
Permeability: Slow or very slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

LyE—Lybrand silt loam, 18 to 50 percent slopes

Setting

Landform: Dissected areas on end moraines and ground moraines
Position on the landform: Backslopes
Size of areas: 5 to 25 acres

Map Unit Composition

Lybrand soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Eroded soils that have a surface layer of silty clay loam or clay loam
• Soils that have a thinner subsoil
• Moderately well drained soils on slopes ranging from 12 to 18 percent

Contrasting components:
• Blount soils in drainageways and seepy areas (5 percent)

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 47 inches
Cation-exchange capacity of the surface layer: 11 to 24 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 3.3 to 5.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Pastureland

• Avoiding overgrazing can minimize the hazard of erosion.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• The slope may restrict the use of some farm equipment.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• If the soil is disturbed, the slope increases the hazard of erosion.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
• The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.

• The slope creates unsafe operating conditions and reduces the operating efficiency of harvesting and mechanical planting equipment.
• The slope restricts the use of equipment for preparing this site for planting and seeding.
• Because of the slope, the use of mechanical planting equipment is not practical.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of the slope, designing local roads and streets is difficult.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 6e
Pasture and hayland suitability group: A-3
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

MbA—Medway silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 5 to 50 acres

Map Unit Composition

Medway soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of loam or silty clay loam
• Soils having a dark surface layer that is more than 24 inches thick
• Soils having a lighter colored surface layer than that of the Medway soil
• Soils that have less sand and more silt in the subsoil than the Medway soil
• Well drained soils
• Somewhat poorly drained soils
Contrasting components:
• Sloan soils in backswamps (10 percent)

Soil Properties and Qualities

Available water capacity: About 10 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Alluvium

Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• This soil is generally unsuited to homesite development.
• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings.
• Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

McA—Medway silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 10 to 50 acres

Map Unit Composition

Medway soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils having a dark surface layer that is less than 10 inches thick

• Soils that have bedrock at a depth of 40 to 60 inches
• Soils having a dark surface layer that is more than 24 inches thick
• Well drained soils
• Somewhat poorly drained soils
• Soils that have bedrock at a depth of 80 to 120 inches

Contrasting components:
• Sloan soils in backswamps (10 percent)

Soil Properties and Qualities

Available water capacity: About 10 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to bedrock (lithic)
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Alluvium overlying limestone or dolostone
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• This soil is generally unsuited to homesite development.
• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings.
• Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

MeA—Mermill loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on lake plains
Size of areas: 10 to 75 acres

Map Unit Composition

Mermill soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have till at a depth of 40 to 60 inches
• Soils that have more clay and less sand in the subsoil than the Mermill soil
• Soils having a surface layer that is more than 10 inches thick
• Soils that have a surface layer of clay loam or silty clay loam
Contrasting components:
• Aurand soils on rises (7 percent)
• Haskins soils on rises (3 percent)

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• A combination of surface and subsurface drainage systems helps to remove excess water.
• The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• A loss of soil productivity may occur following an episode of fire.
• Ponding is a hazard affecting the safe use of logging trucks on roads.

Building sites

• This soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

MfA—Mermill clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, drainageways, and depressions on lake plains
Size of areas: 5 to 50 acres

Map Unit Composition

Mermill soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of loam or silty clay loam
• Soils that have more clay and less sand in the subsoil than the Mermill soil
• Soils having a surface layer that is more than 10 inches thick
• Soils that have till at a depth of 40 to 60 inches
Contrasting components:
• Aurand soils on rises (7 percent)
• Haskins soils on rises (3 percent)

Soil Properties and Qualities

Available water capacity: About 6.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 31 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A combination of surface and subsurface drainage systems helps to remove excess water.
• The movement of water into subsurface drains is restricted. Drainage guides can be used to determine tile spacing requirements.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil

may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Ponding is a hazard affecting the safe use of logging trucks on roads.

Building sites

• The soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

MgA—Millsdale silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on ground moraines and lake plains and on monadnocks on ground moraines
Size of areas: 5 to 50 acres

Map Unit Composition

Millsdale soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have less clay in the subsoil than the Millsdale soil
• Soils having a surface layer that is more than 24 inches thick
• Soils having a surface layer that is less than 10 inches thick
• Soils that have bedrock at a depth of 10 to 20 inches
• Soils that have bedrock at a depth of 40 to 60 inches
• Soils that have a surface layer of silt loam or loam
Contrasting components:
• Randolph soils on rises (8 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Available water capacity: About 5.7 inches to a depth of 35 inches
Cation-exchange capacity of the surface layer: 19 to 35 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 4 to 7 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The rooting depth of crops is restricted by bedrock and a high content of clay.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.

• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A combination of surface and subsurface drainage systems helps to remove excess water.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
• The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• The rooting depth of plants may be restricted by bedrock.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Ponding is a hazard affecting the safe use of logging trucks on roads.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• This soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding and the limited depth to bedrock, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-2
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

MnA—Milton silt loam, 0 to 2 percent slopes

Setting

Landform: Rises on ground moraines and on monadnocks on ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Milton soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of loam
• Moderately well drained soils

• Soils that have more sand and less clay in the subsoil than the Milton soil
• Soils that have bedrock at a depth of 40 to 60 inches

Contrasting components:

• Morley soils in landscape positions similar to those of the Milton soil (5 percent)
• Randolph soils along drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 7 to 22 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 2.4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till and the underlying residuum derived from limestone or dolostone
Permeability: Moderately slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The rooting depth of crops is restricted by bedrock and a high content of clay.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• The rooting depth of plants may be restricted by bedrock.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• Because of the limited depth to bedrock, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2s
Pasture and hayland suitability group: F-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

MpD3—Morley clay loam, 12 to 18 percent slopes, severely eroded

Setting

Landform: Dissected areas on end moraines and ground moraines
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Morley soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils having a thinner subsoil than that of the Morley soil
• Well drained soils
• Somewhat poorly drained soils
Contrasting components:
• Poorly drained soils in seepy areas and along drainageways (5 percent)
• Uneroded soils that have a surface layer of silt loam or loam and are in landscape positions similar to those of the Morley soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 39 inches
Cation-exchange capacity of the surface layer: 12 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 40 inches to dense material
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Moderately slow or slow in the solum and slow or very slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Clay loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• The rooting depth of crops is restricted by dense soil material and a high content of clay.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Avoiding overgrazing can reduce the hazard of erosion.
• Erosion control is needed when pastures are renovated.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

• If the soil is disturbed, the slope increases the hazard of erosion.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
• The slope increases excavation costs, poses safety hazards, and creates a potential for erosion during construction of haul roads and log landings.
• The slope restricts the use of equipment for preparing sites for planting and seeding.
• The slope may restrict the use of some mechanical planting equipment.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs are required to ensure satisfactory performance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of the slope, designing local roads and streets is difficult.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 6e
Pasture and hayland suitability group: A-1
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

MrA—Morley loam, limestone substratum, 0 to 2 percent slopes

Setting

Landform: Rises on monadnocks on ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 80 acres

Map Unit Composition

Morley soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have bedrock at a depth of 40 to 60 inches
• Soils that have a loamy substratum
• Soils having a thicker subsoil than that of the Morley soil
• Soils that have more sand and less clay in the subsoil than the Morley soil
• Well drained soils
• Soils that have a surface layer of silt loam
Contrasting components:
• Milton soils in landscape positions similar to those of the Morley soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.1 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 11 to 22 milliquivalents per 100 grams

Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material; 60 to 80 inches to bedrock (lithic)
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow or slow in the solum and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- This soil is well suited to cropland.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The limited depth to bedrock reduces the filtering capacity of the soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

MsB—Morley, limestone substratum-Milton complex, 2 to 6 percent slopes

Setting

Landform: Knolls on monadnocks on ground moraines
Position on the landform: Backslopes, shoulders
Size of areas: 10 to 75 acres

Map Unit Composition

Morley soil and similar components: 60 percent
Milton soil and similar components: 30 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils that have bedrock at a depth of 40 to 60 inches

- Soils that have a loamy substratum
- Soils that have more sand and less clay in the subsoil
- Soils that have a surface layer of silt loam
- Soils that have a thicker subsoil
- Soils that have slopes of 0 to 2 percent

Contrasting components:

- Biglick soils along drainageways (10 percent)

Soil Properties and Qualities

Morley

Available water capacity: About 6.1 inches to a depth of 42 inches
Cation-exchange capacity of the surface layer: 11 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material; 60 to 80 inches to bedrock (lithic)
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 2 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow or slow in the solum and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Milton

Available water capacity: About 4.8 inches to a depth of 29 inches
Cation-exchange capacity of the surface layer: 7 to 22 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: More than 2.4 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till and the underlying residuum derived from limestone or dolostone
Permeability: Moderately slow
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas of the Morley and Milton soils to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion in areas of the Morley and Milton soils.
- In areas of the Milton soil, the rooting depth of crops is restricted by bedrock and a high content of clay.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the Milton soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers in areas of the Milton soil help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize compaction of the Milton soil.
- Maintaining or increasing the content of organic matter in the Milton soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

- Erosion control is needed in areas of the Morley and Milton soils when pastures are renovated.
- This Milton soil provides poor summer pasture.
- In areas of the Milton soil, plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture in areas of the Milton soil.
- The rooting depth of plants may be restricted by bedrock in areas of the Milton soil.

Woodland

- The low strength of the Morley and Milton soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the Morley and Milton soils increases the cost of constructing haul roads and log landings.

• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the Morley and Milton soils may create unsafe conditions for the operation of logging trucks.
• The stickiness of the Morley and Milton soils reduces the efficiency of mechanical planting equipment.
• In some ares of the Milton soil, the depth to bedrock is a limitation affecting the construction of haul roads and log landings.

Building sites

• Moderate shrinking and swelling of the Morley and Milton soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• This Morley soil is poorly suited to building site development.
• The seasonal high water table in the Morley soil may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas of the Morley soil, the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas of the Milton soil, the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.
• In areas of the Milton soil, the depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.

Septic tank absorption fields

• The restricted permeability of this Morley soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The limited depth to bedrock reduces the filtering capacity of the Morley soil and greatly increases the difficulty of proper installation of the effluent distribution lines.
• The seasonal high water table in areas of the Morley soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.
• Because of the limited depth to bedrock, this Milton soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Because of shrinking and swelling, these Morley and Milton soils may not be suitable for use as base material for local roads and streets.
• In areas of the Morley and Milton soils, local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of the Morley and Milton soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads in areas of the Milton soil.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: Morley, limestone substratum—A-1; Milton—F-1
Prime farmland status: Prime farmland
Hydric soil status: Morley—not hydric; Milton—not hydric

MvB—Mortimer silt loam, 2 to 6 percent slopes

Setting

Landform: Knolls and dissected areas on end moraines
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 35 acres

Map Unit Composition

Mortimer soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Eroded soils that have a surface layer of silty clay loam
• Soils formed in glaciolacustrine sediments
• Soils that have more sand and less clay in the subsoil than the Mortimer soil
• Somewhat poorly drained soils
• Soils that have slopes of 0 to 2 percent

Contrasting components:
• Poorly drained soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.1 inches to a depth of 49 inches
Cation-exchange capacity of the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.

Building sites

• This soil is poorly suited to building site development.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: F-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

MwB2—Mortimer silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Knolls and dissected areas on end moraines
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 40 acres

Map Unit Composition

Mortimer soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Somewhat poorly drained soils
• Soils that have till at a depth of 40 to 60 inches
• Soils formed in glaciolacustrine sediments
• Soils that have more sand and less clay in the subsoil than the Mortimer soil
• Uneroded soils that have a surface layer of silt loam
• Soils having a thinner subsoil than that of the Mortimer soil
Contrasting components:
• Severely eroded soils that have carbonates at a depth of less than 17 inches and are in landscape positions similar to those of the Mortimer soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.2 inches to a depth of 52 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• The root system of winter grain crops may be damaged by frost action.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.
- Burning may destroy organic matter.

Building sites

- This soil is poorly suited to building site development.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 4e
Pasture and hayland suitability group: F-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

NnA—Nappanee loam, 0 to 2 percent slopes

Setting

Landform: Rises and flats on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Nappanee soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Poorly drained soils
- Moderately well drained soils
- Soils that have more sand and less clay in the subsoil than the Nappanee soil
- Soils that have a surface layer of clay loam or silt loam

Contrasting components:
- Hoytville soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 56 inches
Cation-exchange capacity of the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None

Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• The rooting depth of crops may be restricted by the high content of clay.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.

Building sites

• This soil is poorly suited to building site development.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: F-7
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

NnB—Nappanee loam, 2 to 6 percent slopes

Setting

Landform: Dissected areas on lake plains
Position on the landform: Shoulders, backslopes
Size of areas: 3 to 15 acres

Map Unit Composition

Nappanee soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Poorly drained soils
- Soils that have more sand and less clay in the subsoil than the Nappanee soil
- Moderately well drained soils
- Soils that have a surface layer of silt loam
- Eroded soils that have a surface layer of clay loam

Contrasting components:
- Hoytville soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 5.6 inches to a depth of 46 inches
Cation-exchange capacity of the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- The rooting depth of crops may be restricted by the high content of clay.
- A subsurface drainage system helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- This soil provides poor summer pasture.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
- Erosion control is needed when pastures are renovated.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.

Building sites

- This soil is poorly suited to building site development.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: F-7
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

NpA—Nappanee silty clay loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 50 acres

Map Unit Composition

Nappanee soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Poorly drained soils
- Moderately well drained soils
- Soils that have more sand and less clay in the subsoil than the Nappanee soil
- Soils that have a surface layer of silt loam or loam

Contrasting components:
- Hoytville soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 6.5 inches to a depth of 56 inches
Cation-exchange capacity of the surface layer: 13 to 29 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Clods may form if the soil is tilled when wet.

• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: F-7
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

NpB2—Nappanee silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Dissected areas on lake plains
Position on the landform: Shoulders, backslopes
Size of areas: 3 to 20 acres

Map Unit Composition

Nappanee soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Poorly drained soils
• Moderately well drained soils
• Soils that have more sand and less clay in the subsoil than the Nappanee soil
• Uneroded soils that have a surface layer of loam or silt loam
Contrasting components:
• Hoytville soils in depressions and drainageways (10 percent)

Soil Properties and Qualities

Available water capacity: About 4.9 inches to a depth of 40 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• The root system of winter grain crops may be damaged by frost action.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Erosion control is needed when pastures are renovated.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.

• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: F-7
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

NrA—Nappanee-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 10 to 50 acres

Map Unit Composition

Nappanee soil and similar components: 50 percent
Urban land and similar components: 40 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Poorly drained soils
• Soils that have more sand and less clay in the subsoil than the Nappanee soil
• Moderately well drained soils
• Soils that have a surface layer of silt loam or clay loam
Contrasting components:
• Hoytville soils in depressions and drainageways (5 percent)
• Udorthents in areas adjacent to buildings and streets (5 percent)

Soil Properties and Qualities

Nappanee

Available water capacity: About 5.9 inches to a depth of 49 inches
Cation-exchange capacity of the surface layer: 10 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 to 1.0 foot
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Nappanee soil is poorly suited to building site development.
• Moderate shrinking and swelling of this soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this Nappanee soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this Nappanee soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Nappanee—not hydric; Urban land—not ranked

OrA—Oshtemo fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Rises on outwash plains and on beach ridges on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 30 acres

Map Unit Composition

Oshtemo soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
• Soils having a thinner subsoil than that of the Oshtemo soil
• Soils that have loamy fine sand in the surface layer and subsoil
• Soils that have more clay and less sand in the subsoil than the Oshtemo soil
• Soils that have till at a depth of 60 to 80 inches
• Moderately well drained soils
Contrasting components:
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Somewhat poorly drained soils in depressions (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 12 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None

Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Stratified loamy, sandy, and gravelly deposits
Permeability: Moderately rapid in the solum and very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Very low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

- Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

- This soil is well suited to pasture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- This soil is well suited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3s
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

OrB—Oshtemo fine sandy loam, 2 to 6 percent slopes

Setting

Landform: Knolls on outwash plains and on beach ridges on lake plains
Position on the landform: Backslopes, summits, shoulders
Size of areas: 5 to 75 acres

Map Unit Composition

Oshtemo soil and similar components: 93 percent
Contrasting components: 7 percent

Minor Components

Similar components:
- Soils having a darker surface layer than that of the Oshtemo soil
- Soils that have more clay and less sand in the subsoil than the Oshtemo soil
- Soils that have till at a depth of 60 to 80 inches
- Moderately well drained soils
- Soils that have loamy sand or loamy fine sand in the surface layer and in the upper part of the subsoil
- Soils having a thinner subsoil than that of the Oshtemo soil

Contrasting components:
- Somewhat poorly drained soils at the base of slopes (3 percent)
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)
- Vaughnsville soils at the base of slopes (2 percent)

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 12 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Stratified loamy, sandy, and gravelly deposits
Permeability: Moderately rapid in the solum and very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low

Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Very low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

- This soil provides poor summer pasture.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
- Erosion control is needed when pastures are renovated.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- This soil is well suited to building site development.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The excessive permeability limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

OrC—Oshtemo fine sandy loam, 6 to 12 percent slopes

Setting

Landform: Knolls on outwash plains and on beach ridges on lake plains
Position on the landform: Backslopes, shoulders
Size of areas: 5 to 15 acres

Map Unit Composition

Oshtemo soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Soils having a darker surface layer than that of the Oshtemo soil
- Soils that have loamy sand or loamy fine sand in the surface layer and in the upper part of the subsoil
- Moderately well drained soils
- Soils that have more clay and less sand in the subsoil than the Oshtemo soil
- Soils that have till at a depth of 60 to 80 inches
- Soils having a thinner subsoil than that of the Oshtemo soil

Contrasting components:
- Vaughnsville soils at the base of slopes (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 12 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained

Flooding: None
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Stratified loamy, sandy, and gravelly deposits
Permeability: Moderately rapid in the solum and very rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• Avoiding overgrazing can reduce the hazard of erosion.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
• The slope may restrict the use of some mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• Because of the slope, special design and installation techniques are needed for the effluent distribution lines.
• The excessive permeability limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.

Local roads and streets

• Because of the slope, designing local roads and streets is difficult.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-1
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

OsB—Oshtemo sandy loam, till substratum, 2 to 6 percent slopes

Setting

Landform: Knolls on outwash plains and on beach ridges on lake plains
Position on the landform: Shoulders, backslopes, summits
Size of areas: 5 to 50 acres

Map Unit Composition

Oshtemo soil and similar components: 92 percent
Contrasting components: 8 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Oshtemo soil
• Soils that have a surface layer of loamy sand or loamy fine sand
• Moderately well drained soils
• Soils that have more clay and less sand in the subsoil than the Oshtemo soil
• Soils that have till at a depth of 40 to 60 inches
• Soils that have slopes of 0 to 2 percent
Contrasting components:
• Aurand soils in seepy areas or at the base of slopes (5 percent)

• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (3 percent)

Soil Properties and Qualities

Available water capacity: About 6.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 3 to 15 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 3.5 to 6.0 feet
Kind of water table: Perched
Ponding: None
Drainage class: Well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Stratified loamy, sandy, and gravelly deposits overlying till
Permeability: Moderately rapid in the solum, very rapid in the upper part of the substratum, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Sandy loam
Potential for surface runoff: Very low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.

Pastureland

• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The excessive permeability limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

OwB—Ottokee loamy fine sand, 0 to 6 percent slopes

Setting

Landform: Knolls and rises on outwash plains
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 15 acres

Map Unit Composition

Ottokee soil and similar components: 80 percent
Contrasting components: 20 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Ottokee soil

• Soils that have more rock fragments in the substratum than the Ottokee soil
• Soils that have finer textured strata in the subsoil than the Ottokee soil
• Somewhat poorly drained soils

Contrasting components:

• Gilford soils in depressions and at the base of slopes (10 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (10 percent)

Soil Properties and Qualities

Available water capacity: About 5.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 2 to 10 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Sandy deposits
Permeability: Rapid
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Potential for surface runoff: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The excessive permeability limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 3s
Pasture and hayland suitability group: B-1
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

PbA—Patton silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats and depressions on lake plains
Size of areas: 5 to 200 acres or more

Map Unit Composition

Patton soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
- Soils that have till at a depth of 60 to 80 inches
- Soils having a surface layer that is less than 10 inches thick
- Soils that have more clay in the subsoil than the Patton soil

Contrasting components:
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (10 percent)
- Del Rey soils on rises (5 percent)

Soil Properties and Qualities

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 31 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 5 percent
Parent material: Glaciolacustrine deposits
Permeability: Moderate in the solum and moderately slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- Ponding is a hazard affecting the safe use of logging trucks on roads.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- This soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

- Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

PmA—Pewamo silty clay loam, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on end moraines, ground moraines, disintegration moraines, and lake plains
Size of areas: 5 to 300 acres

Map Unit Composition

Pewamo soil and similar components: 94 percent
Contrasting components: 6 percent

Minor Components

Similar components:
• Soils having a surface layer that is less than 10 inches thick
• Soils that have bedrock at a depth of 60 to 80 inches
• Soils that have a surface layer of clay or clay loam
• Soils that have a lighter colored surface layer than that of the Pewamo soil
• Soils in small, closed depressions with 10 to 25 inches of silty overwash overlying as much as 6 inches of organic material and the underlying lacustrine sediments on the Defiance Moraine
• Pewamo soils in undrained, wooded areas
Contrasting components:
• Blount soils on rises (3 percent)
• Elliott soils on rises (2 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (1 percent)

Soil Properties and Qualities

Available water capacity: About 10.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 34 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 5 percent
Parent material: Till
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A combination of surface and subsurface drainage systems helps to remove excess water.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Ponding is a hazard affecting the safe use of logging trucks on roads.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• The soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

PnA—Pewamo-Urban land complex, 0 to 2 percent slopes

Setting

Landform: Drainageways and depressions on end moraines, disintegration moraines, ground moraines, and lake plains
Size of areas: 3 to 50 acres

Map Unit Composition

Pewamo soil and similar components: 50 percent
Urban land and similar components: 30 percent
Contrasting components: 20 percent

Minor Components

Similar components:
• Soils that have till below a depth of 80 inches
• Soils that have more sand and less clay in the subsoil than the Pewamo soil
Contrasting components:
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Blount soils on rises and knolls (7 percent)
• Udorthents or Aquents in areas adjacent to buildings and streets (3 percent)

Soil Properties and Qualities

Pewamo

Available water capacity: About 10.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 34 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 5 percent
Parent material: Till
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Urban land

• In areas of Urban land, the soils have been so altered or covered by buildings or other structures that

classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.
• Onsite investigation is needed to determine the suitability for specific uses in areas of the Urban land.

Use and Management Considerations

Building site development

• This Pewamo soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this Pewamo soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this Pewamo soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Pewamo—hydric soil; Urban land—not ranked

Pt—Pits, quarry

Setting

Landform: Ground moraines, end moraines
Size of areas: Generally, 10 to 100 acres; active quarries continually being enlarged

Map Unit Composition

Pits and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Contrasting components:
• Udorthents, loamy, in spoil areas (8 percent)
• Udorthents, clayey, in spoil areas (2 percent)

Use and Management Considerations

• Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Not ranked

RcA—Randolph silt loam, 0 to 2 percent slopes

Setting

Landform: Rises on ground moraines and on monadnocks on ground moraines
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Randolph soil and similar components: 93 percent
Contrasting components: 7 percent

Minor Components

Similar components:
• Soils that have bedrock at a depth of less than 20 inches
• Moderately well drained soils
• Soils having a darker surface layer than that of the Randolph soil
• Soils that have more sand and less clay in the subsoil than the Randolph soil
• Soils that have a surface layer of loam and silty clay loam
Contrasting components:
• Millsdale soils in depressions and drainageways (7 percent)

Soil Properties and Qualities

Available water capacity: About 4.3 inches to a depth of 25 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Moderately deep
Depth to root-restrictive feature: 20 to 40 inches to bedrock (lithic)
Depth to the seasonal high water table: 0.5 to 1.0 foot

Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Till overlying limestone or dolostone
Permeability: Moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The rooting depth of crops is restricted by bedrock and a high content of clay.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A subsurface drainage system helps to lower the seasonal high water table.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
- The depth to bedrock may restrict the gradient needed to provide adequate drainage from subsurface systems.

Pastureland

- This soil provides poor summer pasture.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- Restricting grazing during wet periods can minimize compaction.
- The root system of plants may be damaged by frost action.
- The rooting depth of plants may be restricted by bedrock.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- In places the depth to bedrock is a limitation affecting the construction of haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The depth to bedrock and hardness of the bedrock greatly reduce the ease of excavation and increase the difficulty in constructing foundations and installing utilities.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the limited depth to bedrock, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

- The depth to bedrock and hardness of the bedrock reduce the ease of excavation and increase the difficulty of constructing roads.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-2
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

RgB—Rawson sandy loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Backslopes, shoulders
Size of areas: 3 to 15 acres

Map Unit Composition

Rawson soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Somewhat poorly drained soils
- Soils that have till at a depth of 40 to 60 inches
- Soils that have a surface layer of loam

Contrasting components:
- Poorly drained soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 5 inches to a depth of 36 inches
Cation-exchange capacity of the surface layer: 5 to 17 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 24 to 48 inches to dense material
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 3.0 percent
Parent material: Loamy deposits and the underlying till
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Sandy loam
Potential for surface runoff: High
Hazard of wind erosion: High

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.

Pastureland

- This soil provides poor summer pasture.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Erosion control is needed when pastures are renovated.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture.

Woodland

- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

• A loss of soil productivity may occur following an episode of fire.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

RhA—Rensselaer loam, till substratum, 0 to 1 percent slopes

Setting

Landform: Flats, depressions, and drainageways on ground moraines and lake plains
Size of areas: 5 to 100 acres

Map Unit Composition

Rensselaer soil and similar components: 88 percent
Contrasting components: 12 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam or clay loam
• Soils that have more clay and less sand in the subsoil than the Rensselaer soil
• Soils having a dark surface layer that is less than 10 inches thick
• Soils that have till at a depth of 40 to 60 inches
• Soils that have till at a depth of more than 80 inches
Contrasting components:
• Tiderishi soils on rises (7 percent)
• Jenera soils on rises (3 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 29 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Perched
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy deposits overlying till
Permeability: Moderate in the solum and the upper part of the substratum and slow or moderately slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.

• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Ponding is a hazard affecting the safe use of logging trucks on roads.

Building sites

• This soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

RnA—Rimer loamy sand, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 15 acres

Map Unit Composition

Rimer soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Poorly drained soils
• Soils that have a surface layer of loamy fine sand
• Soils that have till at a depth of 40 to 60 inches
• Soils having a darker surface layer than that of the Rimer soil
• Moderately well drained soils
Contrasting components:
• Mermill soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 5.4 inches to a depth of 54 inches
Cation-exchange capacity of the surface layer: 3 to 15 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Duration of ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy deposits and the underlying till
Permeability: Rapid in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy sand
Potential for surface runoff: Medium
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• The root system of winter grain crops may be damaged by frost action.

- A subsurface drainage system helps to lower the seasonal high water table.
- The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
- Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

- This soil provides poor summer pasture.
- Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
- Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- This soil is poorly suited to building site development.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

RoA—Rimer loamy fine sand, deep phase, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Rimer soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Soils having a sandy layer that is less than 20 inches thick
- Soils that have more clay and less sand in the subsoil than the Rimer soil
- Moderately well drained soils
- Soils that have till at a depth of 60 to 80 inches

Contrasting components:
- Rensselaer soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 6.8 inches to a depth of 60 inches

Cation-exchange capacity of the surface layer: 3 to 15 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Sandy deposits and the underlying till
Permeability: Rapid in the upper part of the solum, moderately rapid in the lower part of the solum, rapid in the upper part of the substratum, and slow or moderately slow in the lower part of the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loamy fine sand
Potential for surface runoff: Negligible
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• A subsurface drainage system helps to lower the seasonal high water table.
• The effectiveness of subsurface drains may be reduced because the drains can become filled with sand.
• Plant nutrients are leached at an accelerated rate because of the sandy layer.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The excessive permeability in the upper part of the soil limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The restricted permeability in the lower part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

RtA—Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Natural levees, flats, and rises on flood plains
Size of areas: 5 to 150 acres

Map Unit Composition

Rossburg soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
• Soils that have more silt and less sand in the surface layer than the Rossburg soil
• Soils having a dark surface layer that is more than 24 inches thick
• Soils having a lighter colored surface layer than that of the Rossburg soil
• Moderately well drained soils
• Soils that have a surface layer of loam
• Soils that have more rock fragments in the substratum than the Rossburg soil
Contrasting components:
• Sloan soils in backswamps (10 percent)
• Soils subject to rare flooding in the slightly higher areas (5 percent)

Soil Properties and Qualities

Available water capacity: About 11.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 13 to 32 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: More than 6 feet
Ponding: None
Drainage class: Well drained
Flooding duration: Brief
Content of organic matter in the surface layer: 4 to 8 percent
Parent material: Alluvium
Permeability: Moderate in the solum and moderately rapid in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Controlling traffic can minimize soil compaction.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• This soil is generally unsuited to homesite development.
• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: A-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

SeA—Shawtown loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on beach ridges on lake plains, on outwash plains, and in outwash areas on ground moraines and end moraines
Position on the landform: Shoulders, summits
Size of areas: 5 to 20 acres

Map Unit Composition

Shawtown soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
• Soils that have less clay and more sand in the subsoil than the Shawtown soil
• Well drained soils
• Soils that have a surface layer of sandy loam or fine sandy loam
• Soils having a darker surface layer than that of the Shawtown soil
Contrasting components:
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (10 percent)
• Lamberjack soils in depressions (3 percent)
• Alvada soils in drainageways and depressions (2 percent)

Soil Properties and Qualities

Available water capacity: About 7.9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine or water-sorted deposits overlying till
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• This soil is well suited to cropland.

Pastureland

• This soil is well suited to pasture.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The excessive permeability in the middle part of the soil limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

SeB—Shawtown loam, 2 to 6 percent slopes

Setting

Landform: Knolls on beach ridges on lake plains, on outwash plains, and in outwash areas on ground moraines and end moraines
Position on the landform: Shoulders, backslopes, summits
Size of areas: 5 to 50 acres

Map Unit Composition

Shawtown soil and similar components: 91 percent
Contrasting components: 9 percent

Minor Components

Similar components:
• Soils that have less clay and more sand in the subsoil than the Shawtown soil
• Soils that have till at a depth of 40 to 50 inches
• Well drained soils
• Soils that have a surface layer of sandy loam or fine sandy loam
• Soils that have till at a depth of more than 80 inches
Contrasting components:
• Lamberjack soils at the base of slopes and in seepy areas (5 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (4 percent)

Soil Properties and Qualities

Available water capacity: About 8.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 7 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 50 to 70 inches to dense material
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine or water-sorted deposits overlying till
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.

Pastureland

• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

- The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The excessive permeability in the middle part of the soil limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

SfB—Shinrock silt loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 35 acres

Map Unit Composition

Shinrock soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
- Somewhat poorly drained soils
- Soils that have till at a depth of 40 to 80 inches
- Eroded soils that have a surface layer of silty clay loam
- Soils that have more silt and less clay in the subsoil than the Shinrock soil
- Soils that have rock fragments in the subsoil and substratum

Contrasting components:
- Patton soils in depressions (5 percent)

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Glaciolacustrine deposits
Permeability: Moderately slow in the upper part of the solum and moderate or moderately slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

SgC2—Shinrock silty clay loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected areas on lake plains
Position on the landform: Shoulders, backslopes
Size of areas: 5 to 25 acres

Map Unit Composition

Shinrock soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Uneroded soils that have a surface layer of silt loam
• Soils that have till at a depth of 40 to 80 inches
• Well drained soils
• Soils that have rock fragments in the subsoil and substratum
Contrasting components:
• Del Rey soils that have slopes of 0 to 3 percent and are along drainageways and in seepy areas (8 percent)
• Poorly drained soils in depressions (2 percent)

Soil Properties and Qualities

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 milliquivalents per 100 grams
Depth class: Very deep

Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Glaciolacustrine deposits
Permeability: Moderately slow in the upper part of the solum and moderate or moderately slow in the lower part of the solum and in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• The root system of winter grain crops may be damaged by frost action.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

• Avoiding overgrazing can reduce the hazard of erosion.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
• The slope may restrict the use of some mechanical planting equipment.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly

measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Because of the slope, designing local roads and streets is difficult.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: A-6
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

SkB—Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes

Setting

Landform: Knolls on disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Size of areas: 5 to 50 acres

Map Unit Composition

Shinrock soil and similar components: 50 percent
Glynwood soil and similar components: 40 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have till at a depth of 40 to 60 inches
• Eroded soils that have a surface layer of silty clay loam
• Soils that have more sand and less clay in the subsoil
• Somewhat poorly drained soils
Contrasting components:
• Pewamo soils in depressions and drainageways (5 percent)
• Poorly drained soils in depressions (5 percent)

Soil Properties and Qualities

Shinrock

Available water capacity: About 8.2 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Glaciolacustrine deposits overlying till
Permeability: Moderately slow in the upper part of the solum, moderate or moderately slow in the lower part of the solum and in the upper part of the substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Glynwood

Available water capacity: About 5.9 inches to a depth of 39 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 25 to 50 inches to dense material
Depth to the seasonal high water table: 1 to 2 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas of the Shinrock and Glynwood soils to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion in areas of these soils.
• The root system of winter grain crops may be damaged by frost action.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in these soils helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• A subsurface drainage system helps to lower the seasonal high water table.
• Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the Glynwood soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Clods may form if the Glynwood soil is tilled when wet.
• The movement of water into subsurface drains is restricted in areas of the Glynwood soil. Drainage guides can be used to determine tile spacing requirements.

Pastureland

• Erosion control is needed in areas of these soils when pastures are renovated.
• The root system of plants may be damaged by frost action.
• This Glynwood soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity of the Glynwood soil.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture in areas of the Glynwood soil.

Woodland

• Soil wetness may limit the operation of logging trucks in areas of the Shinrock and Glynwood soils.
• The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• The stickiness of the soils reduces the efficiency of mechanical planting equipment.
• Burning may destroy organic matter in areas of the Glynwood soil.

Building sites

• The Shinrock and Glynwood soils are poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soils may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• Because of the high content of sand or gravel in the Shinrock soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.
• In some areas of the Glynwood soil, the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas of the Glynwood soil, the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of these Shinrock and Glynwood soils limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of these soils greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, these Shinrock and Glynwood soils may not be suitable

for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of these soils.
• The low bearing strength of these soils is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: Shinrock—A-6; Glynwood—A-6
Prime farmland status: Prime farmland
Hydric soil status: Shinrock—not hydric; Glynwood—not hydric

SmA—Shoals silt loam, 0 to 2 percent slopes, occasionally flooded

Setting

Landform: Flats and rises on flood plains
Size of areas: 5 to 100 acres

Map Unit Composition

Shoals soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Poorly drained soils
• Soils that have a surface layer of loam
• Moderately well drained soils
• Soils that have till at a depth of 40 to 80 inches
Contrasting components:
• Sloan soils in backswamps (5 percent)

Soil Properties and Qualities

Available water capacity: About 11.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 27 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Somewhat poorly drained
Flooding duration: Brief
Content of organic matter in the surface layer: 2 to 4 percent
Parent material: Alluvium
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding is a hazard affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• This soil is generally unsuited to homesite development.
• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

• This soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-3
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

SnA—Sloan loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flats and backswamps on flood plains
Size of areas: 5 to 35 acres

Map Unit Composition

Sloan soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam
• Soils that have till at a depth of 60 to 80 inches
• Soils that have more silt and less sand in the subsoil than the Sloan soil
• Soils having a lighter colored surface layer
Contrasting components:
• Medway soils on the slightly higher part of the flood plain (5 percent)
• Shoals soils on the slightly higher part of the flood plain (5 percent)

Soil Properties and Qualities

Available water capacity: About 10.6 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding duration: Brief
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Alluvium
Permeability: Moderate or moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

• Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
• Flooding in winter and spring may damage small grain crops.
• A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

• Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
• Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding and ponding are hazards affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.

Building sites

• This soil is generally unsuited to homesite development.
• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding and the flooding, this soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-3
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

SoA—Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flats and backswamps on flood plains
Size of areas: 5 to 50 acres

Map Unit Composition

Sloan soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have a surface layer of silt loam
• Soils that have till at a depth of 60 to 80 inches
• Soils that have more clay and less sand in the subsoil than the Sloan soil
• Soils having a dark surface layer that is less than 10 inches thick
• Soils having a lighter colored surface layer than that of the Sloan soil

Contrasting components:
- Medway soils on the higher part of the flood plain or in areas adjacent to the stream channel (5 percent)
- Shoals soils on the slightly higher part of the flood plain (5 percent)

Soil Properties and Qualities

Available water capacity: About 10.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 33 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding duration: Brief
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Alluvium
Permeability: Moderate or moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Controlling traffic can minimize soil compaction.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Flooding in winter and spring may damage small grain crops.
- A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- Flooding and ponding are hazards affecting the safe use of logging trucks on roads.
- Flooding may result in damage to haul roads and increased maintenance costs.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- Because of the ponding and the flooding, this soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.
- Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

- Because of the ponding and the flooding, this soil is generally unsuited to septic tank absorption fields.
- The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Special design of roads and bridges is needed to prevent the damage caused by flooding.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-3
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

SpA—Sloan silty clay loam, limestone substratum, 0 to 1 percent slopes, occasionally flooded

Setting

Landform: Flats and backswamps on flood plains
Size of areas: 5 to 30 acres

Map Unit Composition

Sloan soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils that have bedrock at a depth of 40 to 60 inches
- Soils that have more clay and less sand in the subsoil than the Sloan soil
- Soils having a dark surface layer that is less than 10 inches thick
- Soils having a lighter colored surface layer than that of the Sloan soil
- Soils that have bedrock at a depth of 80 to 120 inches

Contrasting components:
- Medway soils on the higher part of the flood plain or in areas adjacent to the stream channel (5 percent)
- Shoals soils on the slightly higher part of the flood plain (5 percent)

Soil Properties and Qualities

Available water capacity: About 10.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 33 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to bedrock (lithic)
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding duration: Brief
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Alluvium overlying limestone or dolostone
Permeability: Moderate or moderately slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Controlling traffic can minimize soil compaction.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- Measures that protect the soil from scouring and minimize the loss of crop residue by floodwaters are needed.
- Flooding in winter and spring may damage small grain crops.
- A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

- Forage production can be improved by seeding grass-legume mixtures that are tolerant of flooding.
- Sediment left on forage plants after a flood may affect the palatability of the plants and thus reduce forage intake by the grazing animal.
- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.

• The root system of plants may be damaged by frost action.
• Restricting grazing during wet periods can minimize compaction.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Flooding and ponding are hazards affecting the safe use of logging trucks on roads.
• Flooding may result in damage to haul roads and increased maintenance costs.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• A loss of soil productivity may occur following an episode of fire.

Building sites

• Because of the ponding and the flooding, this soil is generally unsuited to building site development.
• Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.
• Under normal weather conditions, this soil is subject to occasional flooding. The flooding may result in physical damage and costly repairs to buildings. Special design of some structures, such as farm outbuildings, may be needed to prevent damage caused by flooding.

Septic tank absorption fields

• Because of the ponding and the flooding, this soil is generally unsuited to septic tank absorption fields.
• The flooding in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• Rapidly moving floodwaters may damage some components of septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of roads and bridges is needed to prevent the damage caused by flooding.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-3
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

StB2—St. Clair silty clay loam, 2 to 6 percent slopes, eroded

Setting

Landform: Knolls and dissected areas on end moraines
Position on the landform: Shoulders, backslopes
Size of areas: 5 to 40 acres

Map Unit Composition

St. Clair soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Uneroded soils that have a surface layer of silt loam or loam
• Soils that have more sand and less clay in the upper part of the subsoil than the St. Clair soil
• Soils that have till at a depth of 40 to 60 inches
• Somewhat poorly drained soils
Contrasting components:
• Poorly drained soils in drainageways (5 percent)
• Severely eroded soils that have carbonates at a depth of less than 18 inches and are in landscape positions similar to those of the St. Clair soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 6 inches to a depth of 48 inches
Cation-exchange capacity of the surface layer: 12 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 55 inches to dense material
Depth to the seasonal high water table: 2 to 3 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: High
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Erosion control is needed when pastures are renovated.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
• Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
• The stickiness of the soil reduces the efficiency of mechanical planting equipment.
• Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.
• Burning may destroy organic matter.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
• In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3e
Pasture and hayland suitability group: F-5
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

StC2—St. Clair silty clay loam, 6 to 12 percent slopes, eroded

Setting

Landform: Dissected areas on end moraines and lake plains
Position on the landform: Shoulders, backslopes
Size of areas: 5 to 25 acres

Map Unit Composition

St. Clair soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Somewhat poorly drained soils on nearly level toeslopes
• Uneroded soils that have a surface layer of silt loam
• Soils that have slopes ranging from 12 to 18 percent
Contrasting components:
• Severely eroded soils that have carbonates at a depth of less than 18 inches and are in landscape positions similar to those of the St. Clair soil (5 percent)

Soil Properties and Qualities

Available water capacity: About 5.5 inches to a depth of 42 inches
Cation-exchange capacity of the surface layer: 12 to 28 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 20 to 55 inches to dense material
Depth to the seasonal high water table: 2 to 3 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 0.5 to 2.0 percent
Parent material: Till
Permeability: Slow in the solum and slow or very slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Very high
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Erosion has removed part of the surface soil, and the remaining surface soil is less productive and more difficult to manage.
• Incorporating crop residue or other organic matter into the surface layer increases the capacity of the soil to hold and retain moisture. Plants may suffer from moisture stress because of the limited available water capacity.
• Clods may form if the soil is tilled when wet.
• Controlling traffic can minimize soil compaction.
• The rooting depth of crops may be restricted by the high content of clay.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

• This soil provides poor summer pasture.
• Plants may suffer moisture stress during the drier summer months because of the limited available water capacity.
• Applying a system of conservation tillage when pastures are renovated conserves soil moisture.
• Erosion control is needed when pastures are renovated.
• Maintaining healthy plants and vegetative cover can reduce the hazard of erosion.
• Avoiding overgrazing can reduce the hazard of erosion.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.

- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The slope creates unsafe operating conditions and reduces the operating efficiency of logging trucks.
- The slope may restrict the use of some mechanical planting equipment.
- Because of the content of clay, this soil becomes sticky when wet. The stickiness increases the cost of constructing haul roads and log landings.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Because of the stickiness of the soil, equipment used for site preparation should be operated only during the drier periods.
- Burning may destroy organic matter.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
- Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
- The slope influences the use of machinery and the amount of excavation required. Special building practices and designs may be required to ensure satisfactory performance.
- In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.
- In some areas the high content of clay in the subsoil increases the difficulty of digging, filling, and compacting the soil material in shallow excavations.

Septic tank absorption fields

- Because of the slope, special design and installation techniques are needed for the effluent distribution lines and seepage of poorly treated effluent is a concern.
- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- Because of the slope, designing local roads and streets is difficult.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 4e
Pasture and hayland suitability group: F-5
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

ThA—Thackery loam, till substratum, 0 to 2 percent slopes

Setting

Landform: Rises and flats on outwash plains and stream terraces
Position on the landform: Summits, shoulders
Size of areas: 5 to 35 acres

Map Unit Composition

Thackery soil and similar components: 80 percent
Contrasting components: 20 percent

Minor Components

Similar components:
- Soils that have a lower content of rock fragments throughout
- Well drained soils
- Somewhat poorly drained soils
- Soils that have till at a depth of more than 80 inches
- Soils that have a surface layer of sandy loam
- Soils that have till at a depth of 40 to 60 inches
- Soils that have gravelly sandy loam in the upper part of the substratum

Contrasting components:
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (12 percent)

• Alvada soils in seepy areas and depressions (5 percent)
• Houcktown soils in landscape positions similar to those of the Thackery soil (3 percent)

Soil Properties and Qualities

Available water capacity: About 10.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 8 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 60 to 80 inches to dense material
Depth to the seasonal high water table: 1.0 to 2.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy, sandy, and gravelly deposits overlying till
Permeability: Moderate in the loamy solum, rapid or very rapid in the gravelly substratum, and slow or very slow in the till substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Systematic subsurface drainage will extend the period of planting and harvesting crops.

Pastureland

• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Moderate shrinking and swelling of the soil may crack foundations and basement walls. Foundations and other structures may require some special design and construction techniques or maintenance.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability in the upper part of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The excessive permeability in the middle part of the soil limits the proper treatment of the effluent from septic tank absorption fields in areas of this soil. The poorly treated effluent may pollute the water table in the area of the absorption field.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

TkA—Tiderishi loam, 0 to 2 percent slopes

Setting

Landform: Rises and flats on lake plains
Position on the landform: Summits
Size of areas: 5 to 100 acres

Map Unit Composition

Tiderishi soil and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
- Soils that have more clay and less sand in the subsoil than the Tiderishi soil
- Soils having a dark surface layer that is less than 10 inches thick
- Soils having a lighter colored surface layer than that of the Tiderishi soil
- Moderately well drained soils
- Soils that have till at a depth of 20 to 40 inches
- Soils that have till at a depth of 60 to 80 inches

Contrasting components:
- Alvada soils in depressions and drainageways (5 percent)
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (5 percent)
- Rensselaer soils in depressions and drainageways (5 percent)

Soil Properties and Qualities

Available water capacity: About 8.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 12 to 25 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 5 percent
Parent material: Stratified loamy glaciolacustrine deposits overlying till
Permeability: Moderate in the solum and moderately slow or slow in the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

- This soil is poorly suited to building site development.
- The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

Septic tank absorption fields

- The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
- The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
- Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

TnA—Toledo silty clay loam, 0 to 1 percent slopes

Setting

Landform: Depressions and drainageways on lake plains
Size of areas: 5 to 20 acres

Map Unit Composition

Toledo soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
- Soils having a dark surface layer that is more than 10 inches thick
- Soils that have a surface layer of silty clay or clay loam
- Soils having a lighter colored surface layer than that of the Toledo soil

Contrasting components:
- Fulton soils on rises (10 percent)

Soil Properties and Qualities

Available water capacity: About 7.3 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 17 to 36 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 3 to 6 percent
Parent material: Glaciolacustrine deposits
Permeability: Slow
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Silty clay loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

- The root system of winter grain crops may be damaged by frost action.
- Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
- Clods may form if the soil is tilled when wet.
- Controlling traffic can minimize soil compaction.
- The rooting depth of crops may be restricted by the high content of clay.
- Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.
- A combination of surface and subsurface drainage systems helps to remove excess water.
- Including deep-rooted cover crops in the rotation is important for improving soil structure and providing pathways in the clayey subsoil to facilitate the movement of water into subsurface drains.

Pastureland

- Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
- The root system of plants may be damaged by frost action.
- Restricting grazing during wet periods can minimize compaction.

Woodland

- Soil wetness may limit the operation of logging trucks.
- The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
- The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
- The low strength of the soil increases the cost of constructing haul roads and log landings.
- Because of low soil strength, harvesting equipment may be difficult to operate and damage may result.

The low strength of the soil may create unsafe conditions for the operation of logging trucks.
- The stickiness of the soil reduces the efficiency of mechanical planting equipment.
- Ponding is a hazard affecting the safe use of logging trucks on roads.
- A loss of soil productivity may occur following an episode of fire.

Building sites

- This soil is generally unsuited to building site development.
- Because water tends to pond on this soil, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

- Because of the ponding, this soil is generally unsuited to septic tank absorption fields.

Local roads and streets

- Ponding affects the ease of excavation and grading and limits the bearing capacity of this soil.
- Because of shrinking and swelling, this soil may not be suitable for use as base material for local roads and streets.
- Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
- The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 3w
Pasture and hayland suitability group: C-2
Prime farmland status: Prime farmland where drained
Hydric soil status: Hydric soil

ToB—Tuscola loamy fine sand, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Backslopes, summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Tuscola soil and similar components: 93 percent
Contrasting components: 7 percent

Minor Components

Similar components:
- Soils that have slopes of 0 to 2 percent
- Soils that have less clay and more sand in the subsoil than the Tuscola soil
- Soils that have till at a depth of 40 to 80 inches
- Soils that have more clay and less sand in the subsoil than the Tuscola soil
- Well drained soils
- Somewhat poorly drained soils that have thicker sandy layers than those of the Tuscola soil

Contrasting components:
- Poorly drained soils in depressions (5 percent)
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Available water capacity: About 10.1 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 4 to 13 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1.5 to 2.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 2 percent
Parent material: Stratified glaciolacustrine deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Loamy fine sand
Potential for surface runoff: Low
Hazard of wind erosion: Severe

Use and Management Considerations

Cropland

- Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
- Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
- Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
- The root system of winter grain crops may be damaged by frost action.

• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• A loss of soil productivity may occur after a fire.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• The low bearing strength of this soil is generally unfavorable for supporting heavy loads. Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

TpA—Tuscola fine sandy loam, 0 to 2 percent slopes

Setting

Landform: Flats and rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 25 acres

Map Unit Composition

Tuscola soil and similar components: 93 percent
Contrasting components: 7 percent

Minor Components

Similar components:
• Soils having a darker surface layer than that of the Tuscola soil
• Soils that have a surface layer of loam or loamy fine sand
• Soils that have more clay and less sand in the subsoil than the Tuscola soil
• Somewhat poorly drained soils
Contrasting components:
• Poorly drained and very poorly drained soils in depressions (5 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Available water capacity: About 10.4 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1.5 to 2.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• The root system of plants may be damaged by frost action.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

TpB—Tuscola fine sandy loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Shoulders, backslopes, summits
Size of areas: 5 to 35 acres

Map Unit Composition

Tuscola soil and similar components: 93 percent
Contrasting components: 7 percent

Minor Components

Similar components:
• Soils that have slopes of 0 to 2 percent
• Soils that have a surface layer of loam or loamy fine sand
• Well drained soils
• Soils that have less clay in the subsoil than the Tuscola soil
• Somewhat poorly drained soils that have a dark surface layer
Contrasting components:
• Poorly drained soils in depressions (5 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Available water capacity: About 10.5 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1.5 to 2.5 feet
Kind of water table: Apparent
Ponding: None

Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Fine sandy loam
Potential for surface runoff: Low
Hazard of wind erosion: Moderate

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• Maintaining a vegetative cover and establishing windbreaks reduce the hazard of wind erosion.
• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

TuB—Tuscola silt loam, 2 to 6 percent slopes

Setting

Landform: Knolls on lake plains
Position on the landform: Shoulders, backslopes
Size of areas: 5 to 20 acres

Map Unit Composition

Tuscola soil and similar components: 95 percent
Contrasting components: 5 percent

Minor Components

Similar components:
• Soils that have a surface layer of loam
• Soils that have more silt and less clay in the subsoil than the Tuscola soil
• Well drained soils
Contrasting components:
• Poorly drained soils on flats and in depressions (5 percent)

Soil Properties and Qualities

Available water capacity: About 10.7 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 5 to 18 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 1.5 to 2.5 feet
Kind of water table: Apparent
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified glaciolacustrine deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Low
Texture of the surface layer: Silt loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• Grassed waterways can be used in some areas to slow and direct the movement of water and reduce the hazard of erosion.
• Applying a system of conservation tillage and planting cover crops reduce the runoff rate and help to minimize soil loss by erosion.
• The root system of winter grain crops may be damaged by frost action.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• Controlling traffic can minimize soil compaction.
• Maintaining or increasing the content of organic matter in the soil helps to prevent crusting, improve tilth, and increase the rate of water infiltration.

Pastureland

• Erosion control is needed when pastures are renovated.
• The root system of plants may be damaged by frost action.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• Because of the high content of sand or gravel in the soil, the resistance to sloughing is reduced in shallow excavations and cutbanks are susceptible to caving.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2e
Pasture and hayland suitability group: A-6
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

UcA—Udorthents, loamy, 0 to 2 percent slopes

Setting

Landform: Ground moraines, end moraines
Size of areas: 10 to 75 acres

Map Unit Composition

Udorthents and similar components: 75 percent
Contrasting components: 25 percent

Minor Components

Similar components:
- Soils that have slopes of 2 to 6 percent

Contrasting components:
- Areas covered by buildings, roads, and parking lots (10 percent)
- Areas of undisturbed soils (5 percent)
- Soils that have dense till at or near the surface (5 percent)
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (5 percent)

Soil Properties and Qualities

General description: Areas that have had soil material either added or removed during construction activities; on sites for buildings or sanitary landfills, in areas of idle land, and along interstate interchanges
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Ponding: None
Flooding: None

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

UcD—Udorthents, loamy, 2 to 25 percent slopes

Setting

Landform: Ground moraines, end moraines
Size of areas: 5 to 50 acres

Map Unit Composition

Udorthents and similar components: 85 percent
Contrasting components: 15 percent

Minor Components

Similar components:
- Soils that have slopes of 0 to 2 percent

Contrasting components:
- Areas of undisturbed soils (5 percent)
- Dense soils that have till at or near the surface (5 percent)
- Areas covered by roads (5 percent)

Soil Properties and Qualities

General description: Areas that have had soil material either added or removed during construction activities; in areas of idle land, on sites for sanitary landfills, and along interstate interchanges
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Ponding: None
Flooding: None

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Not hydric

Ur—Urban land

Setting

Size of areas: 10 to 100 acres

Map Unit Composition

Urban land and similar components: 88 percent
Contrasting components: 12 percent

Minor Components

Contrasting components:
- Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (12 percent)

Soil Properties and Qualities

- In areas of Urban land, the soils have been so altered or covered by buildings or other structures that classification of the soils is not practical. The areas are sites for single-unit dwellings, apartments, streets, driveways, sidewalks, schools, and churches.

Use and Management Considerations

- Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned
Pasture and hayland suitability group: None assigned
Prime farmland status: Not prime farmland
Hydric soil status: Not ranked

VaA—Vanlue loam, 0 to 2 percent slopes

Setting

Landform: Rises on lake plains
Position on the landform: Summits, shoulders
Size of areas: 5 to 45 acres

Map Unit Composition

Vanlue soil and similar components: 90 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have till at a depth of 20 to 40 inches
• Soils having a darker surface layer than that of the Vanlue soil
• Moderately well drained soils
• Soils that have till at a depth of 60 to 80 inches
• Soils that have a surface layer of sandy loam
Contrasting components:
• Soils subject to rare flooding in areas adjacent to the Blanchard River and its tributaries (8 percent)
• Very poorly drained soils in depressions (2 percent)

Soil Properties and Qualities

Available water capacity: About 9 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 6 to 21 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Depth to the seasonal high water table: 0.5 foot to 1.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Somewhat poorly drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Stratified loamy and silty glaciolacustrine deposits overlying till
Permeability: Moderate in the loamy solum, moderately slow in the lower part of the solum and in the glaciolacustrine part of the substratum, and slow or moderately slow in the till part of the substratum
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Low
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action.
• A subsurface drainage system helps to lower the seasonal high water table.

Pastureland

• Excess water should be removed, or grass or legume species that are adapted to wet soil conditions should be planted.
• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• The seasonal high water table affects the ease of excavation and grading and reduces the bearing capacity of this soil.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Not hydric

VeA—Vaughnsville loam, 0 to 3 percent slopes

Setting

Landform: Beach ridges on lake plains
Position on the landform: Footslopes
Size of areas: 10 to 25 acres

Map Unit Composition

Vaughnsville soil and similar soils: 100 percent

Minor Components

Similar components:
• Aurand soils
• Soils that have till at a depth of 40 to 60 inches
• Soils that have browner colors in the surface layer and in the upper part of the subsoil than those of the Vaughnsville soil

Soil Properties and Qualities

Available water capacity: About 7.1 inches to a depth of 45 inches
Cation-exchange capacity of the surface layer: 9 to 22 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: 40 to 60 inches to dense material
Depth to the seasonal high water table: 2.0 to 3.5 feet
Kind of water table: Perched
Ponding: None
Drainage class: Moderately well drained
Flooding: None
Content of organic matter in the surface layer: 1 to 3 percent
Parent material: Loamy glaciolacustrine deposits and the underlying till
Permeability: Moderate in the upper part of the solum, slow or moderately slow in the lower part of the solum, and slow or very slow in the substratum
Potential for frost action: Moderate
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Medium
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• This soil is well suited to cropland.

Pastureland

• This soil is well suited to pasture.

Woodland

• The low strength of the soil may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soil increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soil may create unsafe conditions for the operation of logging trucks.

Building sites

• This soil is poorly suited to building site development.
• The seasonal high water table may restrict the period when excavations can be made and may require a higher degree of construction site development and building maintenance. Special design of structures is needed to prevent the damage caused by wetness.
• In some areas the dense nature of the substratum increases the difficulty of digging and compacting the soil material in shallow excavations.

Septic tank absorption fields

• The restricted permeability of this soil limits the absorption and proper treatment of the effluent from septic tank absorption fields.
• The seasonal high water table in areas of this soil greatly limits the absorption and proper treatment of the effluent from septic tank absorption fields. Costly measures may be needed to lower the water table on sites for absorption fields.

Local roads and streets

• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.

Interpretive Groups

Land capability classification: 1
Pasture and hayland suitability group: A-1
Prime farmland status: Prime farmland
Hydric soil status: Not hydric

W—Water

This map unit consists of areas inundated with water for most of the year. It generally includes rivers, lakes, and ponds.

No interpretations are given for this map unit.

WeA—Westland-Rensselaer complex, 0 to 1 percent slopes

Setting

Landform: Flats on glacial drainage channels; drainageways and depressions on outwash plains
Size of areas: 20 to 200 acres

Map Unit Composition

Westland soil and similar components: 50 percent
Rensselaer soil and similar components: 40 percent
Contrasting components: 10 percent

Minor Components

Similar components:
• Soils that have till at a depth of 60 to 80 inches
• Soils that have a surface layer of clay loam or silty clay loam
• Soils having a dark surface layer that is less than 10 inches thick
Contrasting components:
• Darroch soils on rises (4 percent)
• Lamberjack soils on rises (4 percent)
• Soils that are subject to rare flooding and are in areas adjacent to the Blanchard River and its tributaries (2 percent)

Soil Properties and Qualities

Westland

Available water capacity: About 9.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 26 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 5 percent
Parent material: Loamy deposits and the underlying sandy and gravelly outwash
Permeability: Moderate in the solum and very rapid in the underlying sandy and gravelly materials
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Rensselaer

Available water capacity: About 11.8 inches to a depth of 60 inches
Cation-exchange capacity of the surface layer: 10 to 29 milliquivalents per 100 grams
Depth class: Very deep
Depth to root-restrictive feature: More than 80 inches
Kind of water table: Apparent
Duration of ponding: Brief
Depth of ponding: 0 to 1 foot
Drainage class: Very poorly drained
Flooding: None
Content of organic matter in the surface layer: 2 to 6 percent
Parent material: Loamy deposits
Permeability: Moderate
Potential for frost action: High
Shrink-swell potential: Moderate
Texture of the surface layer: Loam
Potential for surface runoff: Negligible
Hazard of wind erosion: Slight

Use and Management Considerations

Cropland

• The root system of winter grain crops may be damaged by frost action in areas of the Westland and Rensselaer soils.
• Careful selection and application of chemicals and fertilizers help to minimize the possibility of ground-water contamination.
• A combination of surface and subsurface drainage systems helps to remove excess water.

Pastureland

• Excess water should be removed in areas of these soils, or grass or legume species that are adapted to wet soil conditions should be planted.

• The root system of plants may be damaged by frost action.

Woodland

• Soil wetness may limit the operation of logging trucks in areas of these soils.
• The seasonal high water table can inhibit the growth of seedlings of some species by reducing root respiration.
• The low strength of the soils may cause the formation of ruts, which can result in unsafe conditions and damage to equipment.
• The low strength of the soils increases the cost of constructing haul roads and log landings.
• Because of low soil strength, harvesting equipment may be difficult to operate and damage may result. The low strength of the soils may create unsafe conditions for the operation of logging trucks.
• Ponding is a hazard affecting the safe use of logging trucks on roads.

Building sites

• These soil are generally unsuited to building site development.
• Because water tends to pond on these soils, the period when excavations can be made may be restricted and a higher degree of construction site development and building maintenance may be needed.

Septic tank absorption fields

• Because of the ponding, these soils are generally unsuited to septic tank absorption fields.

Local roads and streets

• Ponding affects the ease of excavation and grading and limits the bearing capacity of these soils.
• Because of shrinking and swelling, these soils may not be suitable for use as base material for local roads and streets.
• Local roads and streets may be damaged by frost action, which is caused by the freezing and thawing of soil moisture.
• Special design of local roads and streets is needed to prevent the structural damage caused by low soil strength.
• The low bearing strength of the Rensselaer soil is generally unfavorable for supporting heavy loads.

Interpretive Groups

Land capability classification: 2w
Pasture and hayland suitability group: Westland—C-1; Rensselaer—C-1
Prime farmland status: Prime farmland where drained
Hydric soil status: Westland—hydric soil; Rensselaer—hydric soil

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

The soils in the survey area are assigned to various interpretive groups at the end of each map unit description and in some of the tables. The groups for each map unit also are shown in the "Interpretive Groups" section.

Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

Map units that have very similar properties may have different interpretations for some uses because of slight differences in depth to a restrictive layer, differences in the thickness of layers, or differences in other features. In some cases, there may not be complete correlation between the hazards and limitations noted in the tables and the management statements addressed in the map unit descriptions. These discrepancies are usually for minor limitations or hazards that have numerical value of 0.10 or less in the tables.

Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are *not limited, somewhat limited, very limited,* and, also included in table 27, *slightly limited*. The suitability ratings are expressed as *well suited, moderately well suited, poorly suited,* and *unsuited* or as *good, fair, poor,* and *very poor*.

Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

Crops and Pasture

Kelly Niehaus, district conservationist, Natural Resources Conservation Service, helped to prepare this section.

General management needed for crops and pasture is suggested in this section. “Crops” are considered to be row crops and hay. The system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

At the end of each map unit description, the soil has been assigned to a pasture suitability group. These groups are based primarily on the suitability of the soil for certain pasture species, management needs, and potential productivity. Detailed interpretations for each pasture suitability group in the county are provided in the “Technical Guide,” which is available in the local office of the Natural Resources Conservation Service.

Cropland Management

Prime agricultural land is dispersed throughout the county. With good management practices, most soils in the county are highly productive for crops and pasture. Major soil management concerns are based upon similarities and differences in soil properties and qualities associated with the different types of soil. The major soil management concerns are seasonal wetness, including ponding; erosion; soil structure damage, including compaction, crusting, and clod formation; droughtiness; and soil fertility.

Seasonal wetness and *ponding* are the major management concerns on about 267,000 acres of land in the county. The very poorly drained Adrian, Alvada, Colwood, Gilford, Hoytville, Mermill, Millsdale, Patton, Pewamo, Rensselaer, Sloan, Toledo, and Westland soils are naturally so wet that crop production is generally not possible unless a surface or subsurface drainage system is installed. The somewhat poorly drained Aurand, Blount, Darroch, Del Rey, Elliott, Fulton, Haskins, Lamberjack, Nappanee, Rimer, Shoals, Tiderishi, and Vanlue soils are naturally so wet that crops are damaged during most years, and planting and harvesting are delayed in areas of these soils unless a drainage system is installed.

Small areas of wet soils in seeps, along drainageways, and in swales are commonly included in map units with the moderately well drained Cygnet, Flatrock, Glynwood, Harrod, Houcktown, Jenera, Medway, Mortimer, Ottokee, Rawson, Shinrock, Thackery, and Tuscola soils. Random subsurface drainage systems are installed in these areas for maximum crop yields.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface and subsurface drains is needed in many areas of the very poorly drained Adrian, Alvada, Colwood, Gilford, Hoytville, Mermill, Millsdale, Patton, Pewamo, Rensselaer, Sloan, Toledo, and Westland soils used for intensive crop production. Drains should be more closely spaced in soils that have slow or very slow permeability than in soils that have moderately slow permeability. Blount, Fulton, Hoytville, Nappanee, and Toledo soils are slowly permeable or very slowly permeable.

Establishing adequate outlets for subsurface drainage systems can be difficult in some areas of the Adrian, Alvada, Colwood, Gilford, Hoytville, Mermill, Millsdale, Patton, Pewamo, Rensselaer, Sloan, Toledo, and Westland soils. Some areas of Pewamo soils mapped on the Defiance Moraine contain numerous closed depressions, or potholes, that are very difficult to drain. These areas are more difficult to drain than other areas of Pewamo soils in the county. Existing county and private drainage systems should be maintained as adequate outlets for present and future land uses. These systems often become outlets for curtain drains that divert water away from basements and septic tank absorption fields in many areas of Hancock County. Urban construction activities can damage and disrupt these existing systems. As a result, renewed wetness and ponding of these previously drained cropland areas now impact the homeowners’ use of this land. Cooperation between the urban and agricultural communities is needed in order to maintain or improve these drainage systems.

Information about the design of drainage systems for each kind of soil is provided in the Field Office Technical Guide, which is available in the local office of the Natural Resources Conservation Service and the Hancock Soil and Water Conservation District.

Erosion by water is a major concern on about 74,000 acres of land in the county. On bare soils, erosion is generally a hazard where the slope is more than 2 percent. The hazard of erosion increases as the percent of slope increases.

Erosion reduces natural soil fertility and productivity as part of the original topsoil is removed

and the more acid subsoil is incorporated into the surface layer through tillage. The need for lime and fertilizer to replace lost plant nutrients and maintain productivity is increased. If the amount of annual soil loss exceeds the rate at which new soil is formed, long-term productivity and natural fertility are affected. Loss of part of the original topsoil is of particular concern in areas of soils that have a high content of clay in the subsoil, such as Biglick, Blount, Glynwood, Lucas, Milton, Morley, Mortimer, Nappanee, Shinrock, and St. Clair soils.

Erosion increases the cost of crop production, results in poor soil structure in the surface layer, increases the need for tillage to incorporate organic matter into the surface layer, and reduces the available water capacity of the surface layer. Tillage for preparing a good seedbed requires more energy in eroded spots in many sloping fields. Lower plant populations result from inadequate soil-to-seed contact and a lower available water capacity. These more eroded spots are common in areas of Glynwood, Lucas, Morley, Mortimer, Nappanee, Shinrock, and St. Clair soils.

Eroding soil particles with attached nutrients, herbicides, and pesticides enter drainageways, streams, rivers, ponds, lakes, and reservoirs. These sediments can fill drainage ditches and block subsurface drainage outlets. Sediment removal is the most costly item in ditch maintenance. Controlling erosion helps to protect the soil resource base, maintain long-term productivity, reduce drainage maintenance costs, and maintain water quality.

In the detailed soil map units, the class listed after the heading “Potential for surface runoff” was determined as follows:

> * * * The soil surface is assumed to be bare and surface water retention due to irregularities in the ground surface is low * * *
>
> Additionally, a standardized antecedent water state condition prior to the water addition is assumed: the soil is conceived to be *very moist* or *wet* to the base of the soil, to $^1/_2$ m, or through the horizon or layer with minimum saturated hydraulic conductivity within 1 meter, whichever is the greatest depth. If the minimum saturated hydraulic conductivity of the soil occurs below 1 meter, it is disregarded and the minimum “to and including 1 m” is employed * * * (Soil Survey Division Staff 1993).

Wind erosion is a problem on some soils in the survey area. Sandy soils, such as those in the Arkport, Dunbridge, Ottokee, Rimer, and Tuscola series, and soils with a surface layer of muck, such as those in the Adrian series, are particularly susceptible to this type of erosion. The abrasive action of windblown sand particles damages crops. Minimizing tillage, avoiding fall plowing, and planting cover crops can reduce the hazard of wind erosion. Sod strips and windbreaks can reduce the effects of wind velocity and the resulting wind-transported soil particle damage to plants.

Management measures that help to control erosion include crop rotations, cover crops, crop residue management, water- and sediment-control basins, grassed waterways, and conservation tillage. Also, plowing in the spring rather than in the fall helps to control erosion. Management measures that conform to a particular cropping system can be selected to keep soil loss to an amount that will not reduce long-term productivity.

Crop rotations that include cover crops and grasses and legumes reduce the hazard of erosion by providing plant cover for extended periods. These rotations protect bare soil from the erosive forces of raindrop splash and water runoff. Increased water infiltration occurs as soil structure improves in the surface layer. The proportion of hay or pasture in the rotation should increase as the percent of slope increases.

A system of conservation tillage, including no-till planting, that leaves crop residue on the surface can help to control erosion on most of the soils in the county. Such a system is best suited to well drained and moderately well drained soils that dry and warm early in the spring. Installing a surface and subsurface drainage system in areas of somewhat poorly drained, poorly drained, and very poorly drained soils is necessary if conservation tillage systems are used. Water- and sediment-control basins can be used in place of grassed waterways in small watersheds. These basins are earth embankments, generally constructed across the slope of minor watercourses. This practice traps sediment and minimizes gully erosion. A high level of management, including weed and insect control, is also needed.

Soil structure damage in the surface layer is more commonly referred to as compaction, crusting, or clod formation.

Compaction is a general management concern on all of the cropland in the county. Pressure applied to the soil surface by farm machinery can cause compaction if the soil is soft and compressible because of wetness. As soil structural units are mashed and smeared, the pore space occupied by air and water within these structural units and between the structural units is reduced. Air and water movement into and out of the soil is also restricted,

resulting in ponding of surface water. This ponding is especially noticeable at the ends of fields where increased traffic occurs. Root penetration is restricted to the upper part of the subsoil. Lower crop yields are most noticeable at the ends of fields.

Factors that affect compaction on all soils regardless of use include machinery size, weight, and design (pounds of force per square inch of soil surface area) and the type of farm implements (wheeled versus tracked).

In addition to compaction, soil texture and soil moisture content also affect crusting and clod formation. *Crusting*, or hardening of the bare soil surface, begins when the surface layer starts to dry after intense periods of rainfall. Many of the soils in Hancock County have a surface layer of silt loam or silty clay loam. A crust can form in these soils as the granular soil structure is destroyed by tillage. This crust must be broken before some crop seedlings will be able to emerge, especially in areas that are continuously row cropped and in which conventional tillage systems are used.

Clod formation, or hardening of the entire surface layer, follows tillage when the soil moisture content is too high. It is most noticeable in areas of soils that have a surface layer that is high in content of clay. Additional tillage is needed to break up these clods and to facilitate preparation of a good seedbed. Unless adequate rain is received soon after planting, lower plant populations result from inadequate soil-to-seed contact and inadequate available water.

Compaction, crusting, and clod formation can be minimized by tilling the soil at the proper soil moisture content. Less tillage results in less destruction of soil structure. No-till systems initially result in less pore space for air and water movement. After 2 or 3 years, new soil structural units are formed and pore space increases for air and water movement. More roots in the soil contribute to better soil structure. In addition, decreased tillage results in an increased number of macropores (earthworm burrows) and increases the pore space in the soil. This condition is most noticeable in areas where long-term no-tillage management systems have been applied, where the soil is used for permanent pasture, or where grass is included in the hay part of the crop rotation.

Droughtiness refers to an insufficient amount of water available for good crop growth between periods of rainfall. Some soils have a higher available water capacity than others. Droughty soils that are used as cropland or pasture in Hancock County are Arkport, Biglick, Channahon, Dunbridge, Joliet, Millsdale, Milton, Oshtemo, Ottokee, and Randolph soils. A moderate depth to bedrock, stony or gravelly material in the lower part of the subsoil, a severe hazard of erosion, or any combination of these soil properties and qualities results in a low available water capacity.

Many of the soils in which moisture shortages occur are well suited to a system of conservation tillage, such as no-till planting, that leaves crop residue on the surface. The crop residue increases the moisture supply by increasing the rate of water infiltration and by reducing runoff and evaporation rates.

Soil fertility depends on the natural fertility level in the soil and on past use and management, including previous applications of lime and fertilizer. As a result, fertility can vary widely from field to field, even on the same kind of soil.

About 16 chemical elements are essential to the growth of plants. High crop yields and productive pastures require adequate levels of plant nutrients, lime, and organic matter. Maintaining these levels results in sustained high yields on all of the soils in the county.

Many nutrients are most readily available to plants in areas where the soil is nearly neutral in reaction (pH). They are less readily available in areas where the soil is more acid or more alkaline. Some soils, such as those in the Adrian series, are acid in the upper part of the root zone. In these soils, periodic additions of lime are needed to increase the availability of plant nutrients.

Soil texture, organic matter content, and the type of clay minerals influence the cation-exchange capacity of the soil, which affects the storage and availability of nutrients. The ability to store and release plant nutrients increases as the content of clay and organic matter increases. Pewamo soils have a high content of clay and organic matter and a high capacity to store and release plant nutrients. Soils that have a lower content of clay or organic matter, such as those in the Arkport and Ottokee series, have a reduced capacity to store and release nutrients and lose more nutrients through leaching. On these soils, frequent applications of a small amount of fertilizer can compensate for the nutrients lost through leaching.

On all soils, additions of lime and fertilizer should be based on the results of soil tests and on crop needs for the expected level of yields. The Ohio State University Extension can help in determining the kinds and amounts of fertilizer and lime to be applied.

Organic matter influences many soil properties, including color, structure, tilth, the rate of water infiltration, available water capacity, and cation-exchange capacity. In Hancock County, soils that have a light colored surface layer generally have a moderate or low content of organic matter in the

surface layer. Soils that have a dark surface layer have a high content of organic matter. Cultivation tends to lower the organic matter content by increasing the rates of oxidation and erosion on sloping soils. Returning all crop residue to the soil helps to maintain the organic matter content. Cover crops, sod crops, green manure crops, and additions of manure increase the organic matter content.

Sewage sludge can have economic value as a source of organic matter and some plant nutrients. If the sludge is applied to land, management concerns include the application rate, the hazards associated with heavy metals, possible odor problems, and health hazards. The chemical composition of the sludge should be determined before the sludge is applied. Additions of sludge to cropland should be based on analysis of the sludge, the results of soil tests, and the expected level of crop yields. The Ohio State University Extension can provide information about the application of sewage sludge.

Pastureland Management

Some of the acreage in the county is used as pasture. The more common pasture and hay plants are alfalfa, red clover, alsike clover, bluegrass, orchardgrass, tall fescue, timothy, and bromegrass. Pastures are commonly in areas of soils that have severe limitations affecting row crops. Shallow soils, such as those in the Biglick and Channahon series, or soils on the steeper slopes, such as those in the Lybrand and Morley series, are commonly used for pasture.

The ability of a pasture to produce forage and to provide enough cover for erosion control is influenced by the number of livestock, the length of the period of grazing, the timeliness of grazing, the forage being grazed, and the availability of water. Good management measures, such as proper stocking rates, pasture rotation, timely deferment of grazing, applications of lime and fertilizer, and control of weeds and insects, help to maintain the key forage plants. Maintaining soil fertility and mowing help to control weeds. The need for lime and fertilizer should be determined by soil tests. The amount of nutrients to be applied should be based on the requirements of the grasses or legumes to be grown.

Erosion control is a management need in areas of gently sloping to very steep soils used as pasture. The hazard of erosion increases as the percent of slope increases. Many of these soils are already eroded. Control of erosion is particularly important when pastures are seeded. Using a no-till seeding method or growing small grain as a companion crop can help to control further erosion.

Soil compaction is caused by overgrazing or grazing when the soils are wet. It can greatly reduce the vigor of pasture plants. Also, it can increase the runoff rate and the hazard of erosion on sloping soils. Deferment of grazing during wet periods minimizes compaction. Subsurface drains can be effective in removing excess water from pastured areas of very poorly drained or somewhat poorly drained soils.

Seeding mixtures should be selected on the basis of soil type and the desired management system. Legumes increase the nutrient value of the forage and provide nitrogen for the growth of grasses. Alfalfa should be seeded in areas of well drained soils that have adequate levels of plant nutrients and lime. The wetter soils are better suited to alsike clover than to red clover or to alfalfa. Information about seeding mixtures, herbicide treatment, and other management measures for specific soils can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Specialty Crops

The specialty crops grown commercially in Hancock County include vegetables, nursery stock, Christmas trees, and fruits. Very few specialty crops in the county are irrigated. Slope, water-holding capacity, infiltration rates, and rooting depths should be considered in irrigated areas. The slope should not exceed 6 percent. Well drained and moderately well drained soils that have a loamy or sandy surface layer, such as those in the Arkport, Fox, Oshtemo, and Ottokee series, respond best to irrigation. Most irrigation water in the county is obtained from wells and ponds.

Specialty crops grown in Hancock County include potatoes, tomatoes, sugar beets, popcorn, and sweet corn. These crops grow best on very deep, dark soils that have a high content of organic matter. Good drainage on the surface and in the root zone are important for a high level of productivity. Vegetables grow well on soils that warm up early and are not susceptible to compaction. A drainage system can be installed in the more poorly drained areas. Adrian, Alvada, Colwood, Gilford, Mermill, and Rensselaer soils could be farmed intensively for vegetable production.

Orchard crops grown in the county include apple, peach, plum, pear, and cherry. Orchard crops grow well on the better drained soils that have a loamy or sandy surface layer, such as those in the Fox, Gallman, Oshtemo, and Shawtown series. Areas of loamy or sandy soils underlain with bedrock, such as those in the Dunbridge series, could be planted to

orchards. Most produce is marketed locally through roadside farm markets.

The latest information about growing specialty crops can be obtained from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Cropland Limitations and Hazards

The management concerns affecting the use of the detailed map units in the county for crops are shown in table 5. The main concerns in managing nonirrigated cropland are controlling flooding, controlling water erosion and wind erosion, removing excess water, minimizing surface crusting and compaction, and maintaining tilth, fertility, and the content of organic matter.

Generally, a combination of several practices is needed to control *water erosion* and *wind erosion*. Conservation tillage, contour farming, conservation cropping systems, crop residue management, diversions, grassed waterways, and field windbreaks help to prevent excessive soil loss

A surface drainage system or a subsurface drainage system, or both, can be used to remove *excess water*, to lower the *seasonal high water table*, and to help control *ponding*.

Tilling within the proper range in moisture content minimizes *surface compaction*.

Measures that are effective in maintaining *soil tilth, fertility,* and the *content of organic matter* include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *ponding, flooding, slope,* and *depth to bedrock*.

Ponding.—Surface drains help to remove excess surface water and minimize the damage caused by ponding.

Flooding.—Flooding can damage winter grain and forage crops. A tillage method that partly covers crop residue and leaves a rough or ridged surface helps to prevent removal of crop residue by floodwater. Tilling and planting should be delayed in the spring until flooding is no longer a hazard.

Slope.—In areas where the slope is more than 25 percent, water erosion can be excessive on cultivated fields. The use of equipment is limited. Cultivation may be restricted. Detailed soil map units with D or E slopes are generally unsuited to row crops.

Depth to bedrock.—Rooting depth and available moisture may be limited by bedrock within a depth of 40 inches.

Additional limitations and hazards are as follows:

Potential for ground-water pollution.—The potential for ground-water pollution is a concern in areas of soils that have excessive permeability, have bedrock within the profile, or have an apparent seasonal high water table.

Root-restrictive layer.—Soil layers with high bulk density have little pore space. These layers limit water storage and restrict the penetration of plant roots.

Limited available water capacity, poor tilth, fair tilth, and *surface crusting*.—These limitations can be overcome by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems.

Surface stones.—Stones or boulders on the surface can hinder normal tillage unless they are removed.

Surface rock fragments.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Very high clay content.—A very high clay content in the subsoil and substratum restricts rooting depth.

High clay content.—A high clay content in the subsoil and substratum restricts rooting depth.

Surface crusting.—Hardening of the bare soil surface can hinder or prevent seedling emergence. Minimizing tillage slows the destruction of soil structure and helps to prevent crusting. Regular additions of crop residue, manure, or other organic materials improve soil structure and minimize crusting.

Frost action.—Frost heaving can damage deep-rooted legumes and some small grain.

Sandy layers.—Deep leaching of nutrients and pesticides may result from sandy layers. Crops generally respond better to smaller, more frequent applications of fertilizer and lime than to one large application.

Clodding.—Clods may inhibit germination, reduce the rate of water infiltration, and increase the runoff rate.

Subsidence of the muck.—Subsidence or shrinking occurs as a result of oxidation in the organic material after the soil is drained. Control of the water table by subirrigation through subsurface drain lines reduces the hazards of subsidence, burning, and soil blowing.

Wind erosion.—The detachment and transportation of soil particles by wind. Cover crops and field windbreaks help protect the soil surface by reducing the amount of exposed surface or by reducing the length of unsheltered areas exposed to prevailing winds.

Following is an explanation of the criteria used to determine the limitations or hazards.

Ponding.—Ponding duration is assigned to the component of the map unit.

Frequent flooding.—The component of the map unit is frequently flooded.

Occasional flooding.—The component of the map unit is occasionally flooded.

High potential for ground-water pollution.—The soil has an apparent water table within a depth of 4 feet or bedrock within a depth of 60 inches, or permeability is more than 6 inches per hour in at least one layer within the soil and the soil does not have a layer with permeability of 0.2 inch per hour or less within 80 inches of the surface.

Moderate potential for ground-water pollution.—Permeability is between 2 and 6 inches per hour in at least one layer within the soil and the soil does not have a layer with permeability of 0.6 inch per hour or less within 80 inches of the surface.

Easily eroded.—The surface K factor multiplied by the average slope is more than 2 (same as prime farmland criteria).

Erosion hazard.—The average slope is more than 2 percent.

Excessive slope.—The upper slope range of the component of the map unit is more than 25 percent.

Most of the surface layer removed by erosion.—The surface layer of the component of the map unit is severely eroded (75 percent or more of the original A and E horizons has been lost).

Part of the surface layer removed by erosion.—The surface layer of the component of the map unit is eroded (25 to 75 percent of the original A and E horizons has been lost).

Root-restrictive layer.—The component has dense material within a depth of 40 inches.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Depth to bedrock.—Bedrock is within a depth of 40 inches.

Surface stones.—The terms describing the texture of the surface layer include any stony or bouldery modifier, or the soil is a stony or bouldery phase.

Surface rock fragments.—The terms describing the texture of the surface layer include any rock fragment modifier except for gravelly or channery, and “surface stones” is not already indicated as a limitation.

Very high clay content.—The component of the map unit has more than 60 percent clay within 40 inches of the soil surface.

High clay content.—The component of the map unit has 40 to 60 percent clay within 40 inches of the soil surface.

Seasonal high water table.—The top of the water table in the component of the map unit is at a depth of 1.5 feet or shallower, and the ponding duration is not assigned.

Surface compaction.—The component of the map unit has a surface layer of silt loam, silty clay loam, clay loam, or silty clay.

Poor tilth.—The component of the map unit is severely eroded, has less than 1 percent organic matter in the surface layer, or has more than 35 percent clay in the surface layer.

Fair tilth.—The component of the map unit has a surface layer of silty clay loam or clay loam, has less than 35 percent clay in the surface layer, or is a moderately eroded phase of loam or silt loam.

Restricted permeability.—Permeability is 0.06 inch per hour or less within 40 inches of the soil surface.

Surface crusting.—The content of organic matter in the surface layer is less than or equal to 3 percent, and the texture is silt loam or silty clay loam.

Clodding.—The component of the map unit has a surface layer with clay content of more than 32 percent.

Sandy layers.—The component of the map unit has sand, loamy sand, loamy fine sand, or fine sand in all layers within 40 inches of the surface, or the subgroup is Psammentic or Arenic.

Frost action.—The component of the map unit has a high potential for frost action.

Subsidence of the muck.—The organic matter content of the surface layer of the component of the map unit is greater than or equal to 20 percent.

Wind erosion.—The component of the map unit is assigned to wind erodibility group 1, 2, or 3.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include

possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, SCS 1961).

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, woodland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, woodland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class or subclass is shown in table 6. The capability classification of map units in this survey area is given in the “Detailed Soil Map Units” section and in the “Interpretive Groups” section.

Crop Yield Index

Table 7 is the crop yield index for Hancock County. The yield index reflects the relative productivity of a soil in relation to other soils in the county. It is based on the most productive soil (Colwood loam, 0 to 1 percent slopes), which is assigned a rating of 100. The other soils are ranked against this standard. The yields used to calculate the index values are based on the use of good management practices.

The estimated yields can be calculated by using the yield index number as a percentage and multiplying it by 192 bushels for corn, 60 bushels for soybeans, or 92 bushels for wheat. For example, to calculate the estimated yield of corn for map unit AdA, multiply the index number given in table 7 for corn, as a percentage (.76), by 192. The result is an estimated 146 bushels of corn.

Advances in equipment technology, plant genetics, drainage, nutrient and pest management, and soil management make standard yield tables obsolete within several years. This index table provides users with the relative productivity of soils, which is less affected by these factors. To use this yield index in the future to calculate estimated yields, use current yield data.

Current yield data and additional information on calculating estimated yields are available from the local office of the Natural Resources Conservation Service or the Ohio State University Extension.

Pasture and Hayland Interpretations

Soils are assigned to pasture and hayland groups according to their suitability for the production of forage. The soils in each group are similar enough to be suited to the same species of grasses or legumes, have similar limitations and hazards, require similar management, and have similar productivity levels and other responses to management.

Under good management, proper grazing is essential for the production of high-quality forage,

stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous top growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

The pasture and hayland suitability group symbol for each soil is given in the section “Detailed Soil Map Units” and in the “Interpretive Groups” section. Soils assigned the same suitability group symbol require the same general management and have about the same potential productivity. The pasture and hayland suitability groups are based on soil characteristics and limitations.

Soils assigned to group A have few limitations affecting the management and growth of climatically adapted plants.

Soils in group A-1 are very deep and are well drained or moderately well drained. They have a surface layer of silty clay loam, fine sandy loam, sandy loam, or loam. Available water capacity ranges from moderate to very high. These soils respond favorably to additions of lime. Frequent applications may be needed to maintain an adequate pH level. A low pH in the subsoil can shorten the life of some deep-rooted legumes in the stand. Slopes range from 0 to 12 percent.

Soils in group A-3 are deep or very deep and are well drained or moderately well drained. They have a surface layer of silt loam. Slopes range from 18 to 50 percent. These soils generally are not suited to pasture or hay because of the slope.

Soils in group A-5 are very deep and are well drained or moderately well drained. They are subject to occasional periods of flooding. The flooding limits the use of these soils for pasture during periods of stream overflow, and sediment lowers the quality of the forage. The soils have a surface layer of silt loam or loam. Available water capacity is moderate or high. Slopes range from 0 to 2 percent.

Soils in group A-6 are very deep, are moderately well drained, and are subject to frost action. Frost action can damage legume stands. Mixing fibrous-rooted grasses with legumes and using proper grazing management methods help to prevent the damage caused by frost action. The soils have a surface layer of silt loam, loam, fine sandy loam, loamy fine sand, clay loam, or silty clay loam. Available water capacity is moderate or high. Slopes range from 0 to 18 percent.

Soils in group B have limited growth and production potential because of droughtiness.

Soils in group B-1 are very deep and are well drained or moderately well drained. They have a surface layer of loam or loamy fine sand. Available water capacity is low. These soils are sandy or coarse-loamy in the subsoil. Slopes range from 0 to 6 percent.

Soils in group C are wet because of a seasonal high water table.

Soils in group C-1 are very deep and are somewhat poorly drained, poorly drained, or very poorly drained. They have a surface layer of silt loam, silty clay loam, silty clay, clay loam, loam, mucky loam, fine sandy loam, loamy fine sand, or loamy sand. Available water capacity ranges from low to high. These soils normally respond well to subsurface drainage. Slopes range from 0 to 4 percent.

Soils in group C-2 are moderately deep to very deep and are somewhat poorly drained, poorly drained, or very poorly drained. They have a surface layer of silty clay loam or silt loam. Available water capacity is low or moderate. A high seasonal water table limits the rooting depth of deep-rooted forage plants. Some of these soils have bedrock at a depth that also restricts root penetration. Shallow-rooted species grow best in areas of these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of a subsurface drainage system is typically restricted by the permeability of the subsoil, the depth to bedrock, or the landscape position of the soil. Because of the limited root zone, the soils in this group are better suited to forage species that do not have a taproot. Slopes range from 0 to 2 percent.

Soils in group C-3 are very deep and are very poorly drained or somewhat poorly drained. They are subject to occasional or frequent periods of flooding. The flooding limits the use of these soils for pasture during periods of stream overflow, and sediment lowers the quality of the forage. The soils have a surface layer of silt loam, loam, or silty clay loam. Available water capacity is high. Slopes range from 0 to 2 percent. Frost action may damage legumes. Including grasses in a seeding mixture and using proper grazing management methods help to prevent the damage caused by frost heaving. A seasonal high water table limits the rooting depth of forage plants. Shallow-rooted species grow best in areas of these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of a subsurface drainage system is restricted by the landscape position of the soils.

Soils in group D are organic soils. Soils in group D-1 are very deep and are very poorly drained. They formed in organic material underlain by sandy deposits. Available water capacity is very high. Slopes are 0 to 1 percent.

Soils in group E are shallow or very shallow and are well drained, moderately well drained, somewhat poorly drained, or poorly drained. These soils have bedrock between depths of 4 and 20 inches that restricts the penetration of roots. These soils are droughty. They have a surface layer of loam. Available water capacity is very low or low. Slopes range from 0 to 12 percent.

Soils in group F have only a moderately deep root zone. The growth of climatically adapted plants is restricted in these soils to a depth of 20 to 40 inches. Because of the restricted root zone, the soils in this group are better suited to forage species that do not have a taproot.

Soils in group F-1 are moderately deep and are well drained or moderately well drained. The Harrod soil in map unit HaA is subject to frequent periods of flooding. The flooding limits the use of this Harrod soil for pasture during periods of stream overflow, and sediment lowers the quality of the forage. The soils in group F-1 have a surface layer of silt loam, loam, or loamy fine sand. Available water capacity is very low to moderate. These soils are droughty but are suitable for warm-season grasses, such as switchgrass, big bluestem, indiangrass, and Caucasian bluestem. The soils respond favorably to additions of lime. Frequent applications may be needed to maintain an adequate pH level. The low pH of the subsoil in some of these soils can shorten the life of some deep-rooted legumes in the stand. Slopes range from 0 to 6 percent.

Soils in group F-5 are very deep and are moderately well drained. They have a surface layer of silty clay loam or silt loam. Available water capacity is low or moderate. A high content of clay in the subsoil restricts the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best in areas of these soils. Because of the limited root zone, the soils are better suited to forage species that do not have a taproot. Slopes range from 2 to 12 percent.

Soils in group F-7 are very deep and are somewhat poorly drained or very poorly drained. They have a surface layer of loam or silty clay loam. Available water capacity is low or moderate. A high content of clay in the subsoil restricts the rooting depth of deep-rooted forage plants. Shallow-rooted species grow best in areas of these soils. Subsurface drains are used to lower the seasonal high water table. The effectiveness of a subsurface drainage system is generally limited by the permeability of the subsoil and the landscape position of the soils. Because of the limited root zone, these soils are better suited to forage species that do not have a taproot. Slopes range from 0 to 6 percent.

Additional information about forage yields in the county can be obtained at the local office of the Natural Resources Conservation Service or from the Ohio State University Extension.

Prime Farmland and Other Important Farmlands

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, woodland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 327,000 acres, or about 96 percent of the total acreage in the county, meets the soil requirements for prime farmland as defined by the U.S. Department of Agriculture. The acreage in the county dominantly consists of prime farmland soils;

however, small areas of soils that do not meet the requirements for prime farmland are scattered throughout the county.

Most of the prime farmland in the county is used as cropland. Urbanization in and around the cities of Findlay and Fostoria and development along the Interstate 75 corridor account for most of the prime farmland lost to agricultural uses.

The map units in the survey area that are considered prime farmland are listed in table 8 and shown in the “Interpretive Groups” section. The list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading “Detailed Soil Map Units.”

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these special crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Because it is not based on national criteria, unique farmland can differ from one area to another. A list of unique farmland is developed as needed in cooperation with conservation districts and others.

In some areas land that does not meet the criteria for prime or unique farmland is considered to be farmland of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be farmland of local importance for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

Table 9 shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of this table, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the table are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation).

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect agricultural waste management. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are generally favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are either solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table,

ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Woodland Productivity and Management

Steve Siam, service forester, Ohio Department of Natural Resources, Division of Forestry, helped to prepare this section.

Nearly all of Hancock County was forested at the time of the earliest land surveys. The climax forest community was dominantly beech forest in most of the county. The northern part of the county is within the Great Black Swamp Region of Ohio. This area was characterized by an elm-ash swamp forest community. Scattered remnants of other native plant communities exist in the county. These include the mixed oak forest community and the marshes and fens community (Gordon 1969).

In 1985, nearly 21,800 acres, or about 6.4 percent of the county, remained in woodland (Hancock Soil and Water Conservation District 1995). Most of this acreage is in small, scattered woodlots on slopes along stream valleys, on flood plains, and in isolated tracts on uplands. Most of the woodland has been cut over, and much of it has been grazed.

The return from the sale of wood products is smaller than that from the sale of other farm products on individual farms. However, if timber is competitively bid out, the maximum profit can be realized because of increased demand and changing markets for a variety of native hardwoods. The demand for high-quality oak and walnut is relatively stable, but new markets, such as elm veneer, are developing.

The potential for increased production of timber is high. If managed well, woodlots are capable of producing high-quality, rapidly growing native hardwoods. Woodlots also provide firewood, lumber, edible nuts, wildlife habitat, esthetic value, and protection from winds.

Much of the woodland in the county is in need of some type of conservation treatment. Livestock grazing in the woodland and inadequate timber management are the major problems. Timber stand improvement practices, such as culling diseased trees and the less desirable trees and cutting and spraying grapevines, improve the growth rate of favored species. Harvesting mature trees benefits desirable trees by reducing competition and the potential for disease. When species are selected for planting on open ground, the slope and the type of soil should be considered. Planting in established stands is seldom necessary. Fencing livestock out of the woods and providing fire protection help to maintain good stands.

The soil properties at a specific site influence woodland management. The seedling mortality rate, the hazard of windthrow, the equipment limitation, and the hazard of erosion are management concerns that are influenced by the soil type. The water-holding capacity, drainage, and slope affect plant competition and seedling mortality. The texture of the surface layer, the organic matter content, slope, and drainage influence logging schedules, the equipment limitation, and the extent of damage sustained to the woodland environment during logging. Depth to the seasonal high water table or depth to bedrock influence rooting depth, which in turn affects windthrow and site productivity.

Soil type and plant species are related. Soils that are subject to ponding for part of the year commonly support stands of soft maple, bur oak, swamp white oak, and pin oak. The somewhat poorly drained, poorly drained, and very poorly drained soils are best suited to hydrophytic species, such as sycamore, swamp white oak, American elm, and pin oak. Moderately well drained and well drained soils support a greater variety of tree species, including white pine, red oak, white oak, ash, hickory, basswood, walnut, yellow-poplar, sugar maple, beech, and cherry.

Information on woodland management is available from the Ohio Department of Natural Resources, Division of Forestry; the Ohio State University Extension; and the Natural Resources Conservation Service.

Tables 10 through 13 can help woodland owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of woodland management.

Woodland Productivity

In table 10, the *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or

improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the “National Forestry Manual” (USDA, NRCS n.d.). This manual is available at the local office of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Woodland Management

In tables 11 through 13, interpretive ratings are given for various aspects of woodland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified woodland management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately well suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified woodland management practice (1.00) and the point at which the soil feature is not a limitation (0.00). Soils with no potential limitations (or soils with values less than 0.01) have a rating of low, slight, or well suited and are not assigned a value in the tables.

Rating class terms for fire damage and seedling mortality are expressed as *low, moderate,* and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for woodland management practices. More detailed information about the criteria used in the ratings is available in the “National Forestry Manual” (USDA, NRCS n.d.). This manual is available at the local office of the Natural Resources Conservation Service or on the Internet.

Ratings in the column *erosion hazard* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of woodland equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

For limitations affecting *construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or

more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately well suited, or poorly suited to this use.

Ratings in the column *harvest equipment operability* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, or poorly suited to this use.

Ratings in the column *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for site preparation* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

Ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Windbreaks and Environmental Plantings

Greg Maxfield, district forester, Ohio Department of Natural Resources, Division of Forestry, helped to prepare this section.

In Hancock County, the importance of field windbreaks and environmental plantings is increasing. Many soils in the county are susceptible to wind erosion. They include the Adrian, Arkport, Ottokee, Rimer, and Tuscola soils. These soils can be severely affected by southwesterly winds in the spring. As a result, newly planted seeds may be left uncovered and small plants are damaged by windblown sand. In addition to helping control erosion, properly designed field windbreaks reduce the amount of windblown soil that reaches drainage ditches on farms.

Farm and homestead windbreaks are rows of trees or shrubs established adjacent to farm buildings, feedlots, and homes. These windbreaks are usually planted perpendicular to the prevailing winter wind. Planting multiple rows of various species provides the best protection from winds and results in more varied wildlife habitat.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 14 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from a commercial nursery or from the local office of the Natural Resources Conservation Service; the Ohio Department of Natural Resource, Division of Forestry; or the Cooperative Extension Service.

Landscaping

In the urban areas of Hancock County, specifically Findlay and Fostoria, the soils have been disturbed by excavation and construction and landscaping is possible only if special measures are taken to prepare the soil material for the plants. The soils closest to structures are most likely to be radically altered. This is especially true in detailed soil map units that include a soil and Urban land and in miscellaneous land areas, such as Aquents or Udorthents. Plants generally will grow well unless the physical and chemical properties of the soil have been severely altered. During construction, as many of the existing trees as possible should be left on building sites.

Homeowners should consult personnel from local nurseries, horticulturists, landscape designers, or extension agents for species that are suitable for planting. The following factors should be considered before plants for landscaping are selected:

Shade.—In areas where a soil is mapped in a complex with Urban land, the soil may be in shade much of the day because of the high density of buildings. Plants in these areas grow poorly unless they are shade tolerant. The patterns of shade should be observed in these areas before the specimens are selected for planting.

Wetness.—Some plants do not thrive in wet soils, such as those in the Alvada and Pewamo series. Installing a subsurface drainage system helps to overcome the wetness if the soil is permeable enough for excess water to move through the disturbed soil and into the drain line. Raising the plant beds by adding suitable soil material helps to provide a satisfactory root zone. Some soils in the lower landscape positions are subject to ponding by runoff from adjacent slopes. Diverting the runoff helps to overcome the hazard of ponding. Overcoming wetness in urban areas is sometimes difficult, however, because property line restrictions limit the alternatives.

Restricted root zone.—In some soils, the root zone is restricted by bedrock or a dense soil layer and the soil generally does not hold enough water for plants throughout the growing season. If Biglick, Fox, Milton, and Oshtemo soils are severely graded during construction, the underlying bedrock or sand and gravel in the substratum may become exposed or is within only a few inches of the surface. Most grading operations around homesites result in a greater degree of soil compaction than that in natural soils. The soils that have a root-restricting layer near the surface are also susceptible to frost action during periods of freezing and thawing. If sloping, these soils may contribute sediment and surface runoff or seep water to driveways and walks, causing wet, messy conditions in warm weather and an ice hazard in winter. Adding topsoil and mixing organic matter into the surface layer of the soil increase the thickness of the root zone. These practices also increase the available water capacity of the soil.

Gardening

William Lanning, coordinator of the Hancock County Master Gardener Program, helped to prepare this section.

The soils in this county are suited to many varieties of flowers and vegetables. Many of these plants have about the same soil requirements. This section describes features of a good garden soil and the features that restrict the use of some soils.

The most favorable soil for a garden is nearly level or gently sloping, loamy, and permeable. It is adequately aerated but has moderate or high available water capacity. It generally should be slightly acid or neutral (pH of 6.0 to 7.0). Many soils in Hancock County, especially those associated with building sites, have a moderate or low content of organic matter in the surface layer. Additions of organic matter from locally available sources, such as compost or leaves, will benefit flowers and vegetables, regardless of the kind of soil indicated by the soil map.

Many soils in the urban areas of Hancock County have been slightly or severely disturbed during the construction process. Usually, the closer a garden site is located to a building, the greater the possibility for soil disturbance during the construction process.

The undisturbed or slightly disturbed soils that are well suited to flower and vegetable gardens in Hancock County are the nearly level or gently sloping, well drained or moderately well drained, loamy soils. The Cygnet, Fox, Houcktown, Shawtown, Thackery, and Tuscola soils are examples.

The well drained and moderately well drained Flatrock, Knoxdale, Medway, and Rossburg soils on flood plains are subject to occasional periods of flooding. This flooding, however, occurs mostly in early spring, so most vegetables can be grown and are not damaged by the flooding.

Most of the soils in Hancock County are very poorly drained or somewhat poorly drained. On these soils, wetness may delay planting by 2 to 4 weeks. Examples are the Blount, Del Rey, Fulton, Hoytville, Nappanee, Pewamo, and Toledo soils.

The surface layer of a few soils in the county also has a high content of clay that may restrict good seedbed preparation because of the poor tilth. This can result in poor soil-seed contact and uneven germination rates. Examples of these soils are those in the Hoytville and Nappanee series, as well as the eroded phases of Glynwood, Lucas, and Shinrock soils. Addition of organic matter helps to improve tilth and soil structure.

Recreation

Hancock County has more recreational opportunities than many counties in the northwestern part of Ohio. The extensive Hancock County Park District, established in 1970, has a network of parks, hiking and bicycle trails, and nature preserves throughout the county. Many educational and other

seasonal activities scheduled for the public are available during the calendar year. In addition, Van Buren State Park is open to the public for camping, fishing, hiking, and other outdoor activities.

Findlay has several city parks and recreational facilities available for use by the public. There are 10 village parks throughout the county. They provide athletic fields, swimming pools, playground equipment, and shelter houses. There are also many public and private golf courses in the county. Recreational areas are on a wide variety of soils. Several of the county and village parks include areas on flood plains; these areas are used for seasonal outdoor activities.

The soils of the survey area are rated in tables 15 and 16 according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in the tables can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Playgrounds require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds.

For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Paths and trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Jeff Burris, wildlife technician, Ohio Department of Natural Resources, Division of Wildlife, helped to prepare this section.

The abundance and diversity of wildlife have declined in the intensively farmed counties in northwestern Ohio. As farming has become mechanized and the acreage of corn and soybeans has increased, there are fewer acres of diversified crops, fence rows, and streambanks lined with woody vegetation. This acreage provides good habitat for wildlife. Fall plowing of cropland destroys the food and cover needed by wildlife to survive the winter. Suitable habitat is the single most important factor determining the existence of a diverse wildlife population. The types of wildlife habitat that occur in Hancock County include wetland, grassland, woodland, cropland, and riparian (fig. 8).

Wetland habitat offers shelter for migratory waterfowl, shore birds, songbirds, amphibians, reptiles, and mammals. Wetlands produce invertebrates and plants that are important foods for game and nongame species. They also act as filters for pollution and as storage basins for floodwater and help to control erosion.

Grassland habitat generally provides valuable nesting cover. It also furnishes food in the form of seed and succulent, green plant parts.

Woodland habitat in the county has been altered by the conversion of woodland to cropland, overgrazing in wooded areas, residential and industrial development, and commercial timber harvest. Forest land in the county consists of small woodland “islands” and wooded corridors along streams. These corridors and islands are surrounded by large expanses of cropland.

Cropland habitat is seasonal and is therefore transitory in nature. Cropland provides some food and shelter for wildlife. Moldboard plowing reduces the amount of quality habitat available for resident species; however, more and more cropland is being cultivated by the no-till method, which leaves crop residue on the soil surface. This provides shelter and some food for wildlife during the winter months. Fence rows along field boundaries also provide shelter for wildlife species. Marginal cropland that has been converted to wildlife habitat under provisions of the 1985 Farm Bill has increased the amount of available habitat for game and nongame species.

Stream corridors, or riparian habitat, consists of the land and corresponding vegetation along the banks of a watercourse. Riparian habitat is one of the richest and most diverse habitat types in Hancock County. Riparian buffer zones provide many important benefits. They help to maintain the high quality of water and to improve the habitat for a diverse population of wildlife. The quality of water in streams and rivers has declined because the natural characteristics of the streams and rivers have been altered. Tillage and drainage of the land combined with the loss of forested buffer zones have caused watercourses to become wider, shallower, and more turbid.

If they are properly managed, all of the soils in Hancock County can provide the habitat elements needed for wildlife. Incorporating openland, wetland, and woodland wildlife habitat principles into current agricultural practices can increase the quantity and quality of wildlife habitat in the county. Additional information about the development of wildlife habitat can be obtained from the local game protector and at the local office of the Ohio State University Extension or the Natural Resources Conservation Service.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also

Figure 8.—Included in map units with Pewamo soils are undrained, wooded areas that provide habitat for wetland and woodland wildlife species.

affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 17, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed

crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of grain and seed crops are corn, wheat, oats, and soybeans.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture also are considerations. Examples of grasses and legumes are fescue, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture also are considerations. Examples of wild herbaceous plants are Queen Anne's lace, goldenrod, common teasel, lambsquarters, and yarrow.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and raspberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, cattail, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous and/or coniferous plants and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, and mink.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others 1979; U.S. Army Corps of Engineers 1987; National Research Council 1995; Tiner 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information,

such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff 1998) and in the "Soil Survey Manual" (Soil Survey Division Staff 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt, Whited, and Pringle 1998).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

The map units in table 18 meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council 1995; Hurt, Whited, and Pringle 1998).

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The map units in table 19, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank

absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Tables 20 and 21 show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Dwellings are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as

inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing. All soils, especially when they are at or near saturation, have the potential to slough, and cutbanks are susceptible to caving. Care should always be taken when making excavations.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer.

Sanitary Facilities

Tables 22 and 23 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the

water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A *trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Construction Materials

Tables 24 and 25 give information about the soils as potential sources of gravel, sand, topsoil, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications

for each use vary widely. In table 24, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The thickest layer is the thickest layer above the bottom layer. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is an unlikely source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good, fair,* or *poor* as potential sources of roadfill and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of topsoil or roadfill. The lower the number, the greater the limitation.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Tables 26 and 27 give information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; aquifer-fed excavated ponds; grassed waterways and surface drains; terraces and diversions; and drainage.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Slightly limited* indicates that the soil has features that are favorable for the specified use. The limitations are minor and can be easily overcome. Good performance and low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment (fig. 9). Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In table 26, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by

Figure 9.—Glynwood soils are good sites for pond reservoirs.

depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Grassed waterways and surface drains are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, restricted permeability, and toxic substances, such as salts and sodium, adversely affect the growth and maintenance of the grass after construction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, a cemented pan, or other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or a cemented pan, large stones, slope, and the hazard of cutbanks caving. The availability of drainage outlets is not considered in the ratings.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics. These results are on file at the School of Natural Resources, The Ohio State University, in Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, in Columbus; and in the state office of the Natural Resources Conservation Service in Columbus.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

Table 28 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 10). “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an

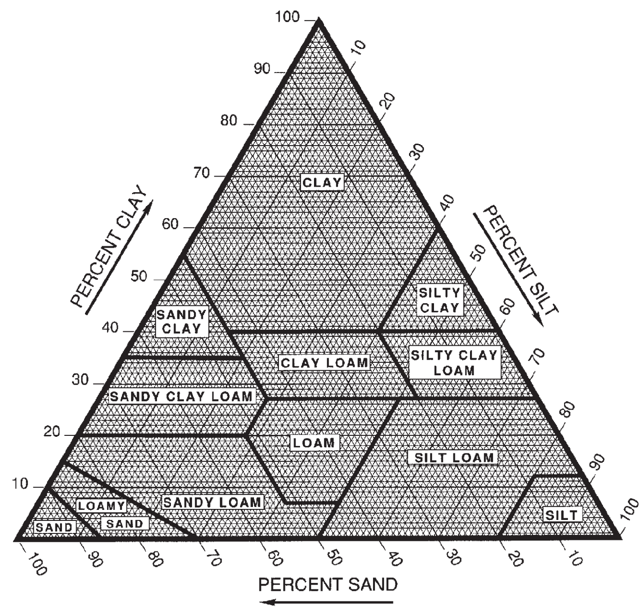

Figure 10.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral

soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Physical Properties

Table 29 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 29, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$- or $^{1}/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the

interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factors are shown in table 29 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Chemical Properties

Table 30 shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 30, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliquivalents per 100 grams of

soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Soil Features

Table 31 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 32 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Water table data in table 32 reflect drained conditions. A saturated zone that lasts for less than a month is not considered a water table.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone. An artesian water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 32 indicates *surface water depth* and the *duration* and *frequency* of ponding. Ponding data in the table reflect drained conditions. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Individual delineations of some map units in the county are rarely flooded. These delineations are identified under the “Minor Components” heading in the individual map unit descriptions in the “Detailed Soil Map Unit” section. When these areas are identified in the map unit descriptions, local Federal Emergency Management Agency flood plain maps should be consulted to determine if the delineation lies within the 100-year flood plain. For an example, refer to the description of detailed soil map unit AkA or AmA.

Physical and Chemical Analyses of Selected Soils

The samples for chemical and physical analyses were taken from representative sites of several of the soils in the county. The chemical and physical analyses for many of the soils in the county were made by the Soil Characterization Laboratory, School of Natural Resources, The Ohio State University, in Columbus, Ohio. The laboratory procedures can be obtained from the laboratory. The results of the analyses are stored in a computerized data file at the

laboratory. The physical and chemical data obtained from the samples include particle-size distribution, reaction, organic matter content, calcium carbonate content, and extractable cations.

These data were used in classifying and correlating soils and in evaluating their behavior under various land uses. Seven pedons were selected as representative of the respective series and are described in the section titled “Soil Series and Their Morphology.” These series and their laboratory identification numbers are Vaughnsville, HK-20; Biglick, HK-34; Glynwood, HK-43; Aurand, HK-44; Lamberjack, HK-45; Houcktown, HK-46; and Mortimer, HK-47.

In addition to the data from Hancock County, laboratory data are available from nearby or adjacent counties that have many of the same soils. These datasets and the data from Hancock County are on file at the School of Natural Resources, The Ohio State University, in Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, in Columbus; and the state office of the Natural Resources Conservation Service in Columbus.

Engineering Index Test Data

Engineering index test data are available for several pedons from Hancock County. Additional engineering index test data are also available from several nearby counties that have many of the same soils as Hancock County. The soils were analyzed for engineering properties by the Soils and Foundation Section of the Ohio Department of Transportation, Division of Highways, Bureau of Testing, in Columbus, Ohio. The laboratory procedures can be obtained from the laboratory. The available test data are on file at the MLRA Project Office in Findlay, Ohio; the School of Natural Resources, The Ohio State University, in Columbus, Ohio; the Ohio Department of Natural Resources, Division of Soil and Water Conservation, in Columbus; and the state office of the Natural Resources Conservation Service in Columbus.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff 1998, 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 33 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, mesic Typic Hapludalfs.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. Pedons used in this publication were primarily described and documented as part of the Hancock County modernization process. In certain circumstances, pedons from adjacent survey areas or from the site of the official series description (OSD) were utilized. In most cases, typical pedons from adjacent survey areas were used to provide consistent supporting data and documentation across survey area boundaries. In the remaining cases, the typical pedon from the site of the OSD was used in order to transition toward the use of OSDs as part of a nationwide trend in soil survey publications. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (Soil Survey Division Staff 1993). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (Soil Survey Staff 1975) and in “Keys to Soil Taxonomy” (Soil Survey Staff 1994). Unless otherwise indicated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

Adrian Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow to moderately rapid in the organic material and rapid in the underlying sandy deposits
Parent material: Herbaceous organic material and the underlying sandy deposits
Landform: Depressions on outwash plains
Slope: 0 to 1 percent
Adjacent soils: Colwood, Gilford, Westland

Taxonomic classification: Sandy or sandy-skeletal, mixed, euic, mesic Terric Medisaprists

Typical Pedon

Adrian muck, 0 to 1 percent slopes; about 2.5 miles northeast of Vanlue, in Biglick Township; about 2,040 feet west and 960 feet south of the northeast corner of sec. 26, T. 1 N., R. 12 E.

Oap—0 to 11 inches; black (10YR 2/1) muck (sapric material), very dark gray (10YR 3/1) dry; about 10 percent fiber, less than 5 percent rubbed; weak fine and medium granular structure; very friable; common fine roots; strongly acid; clear smooth boundary.

Oa1—11 to 17 inches; black (5YR 2.5/1) muck (sapric material); about 20 percent fiber, less than 10 percent rubbed; weak medium and coarse subangular blocky structure; very friable; common fine roots; strongly acid; gradual wavy boundary.

Oa2—17 to 23 inches; dark reddish brown (5YR 2.5/2) muck (sapric material); about 15 percent fiber, less than 5 percent rubbed; weak medium and coarse subangular blocky structure; very friable; common fine roots; common distinct reddish brown (5YR 4/4) streaks of ferrihydrite in old root channels; strongly acid; clear wavy boundary.

Oa3—23 to 26 inches; dark reddish brown (5YR 2.5/2) muck (sapric material); about 15 percent fiber, less than 10 percent rubbed; weak medium and coarse subangular blocky structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

Cg1—26 to 32 inches; dark gray (10YR 4/1) loamy sand; single grain; loose; few fine roots; few faint very dark gray (10YR 3/1) organic stains coating sand grains; few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 1 percent rock fragments; slightly acid; gradual wavy boundary.

Cg2—32 to 80 inches; gray (10YR 5/1) sand with strata of fine sandy loam, loamy fine sand, loamy sand, and loamy coarse sand; single grain; loose; few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 1 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the organic material: 16 to 51 inches
Depth to bedrock: More than 80 inches

Oa horizon:
Color—hue of 10YR, 7.5YR, or 5YR or is neutral; value of 2, 2.5, or 3; chroma of 0 to 2
Texture—muck (sapric material)

C or Cg horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 3 to 6; chroma of 1 to 4
Texture—sand, fine sand, loamy sand, loamy coarse sand, or the gravelly analogs of those textures; strata of sandy loam or loamy fine sand in some pedons
Content of rock fragments—0 to 25 percent

Alvada Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum, and moderately slow or slow in the substratum
Parent material: Loamy and gravelly deposits overlying till
Landform: Depressions and drainageways on outwash plains, ground moraines, end moraines, and lake plains
Slope: 0 to 2 percent
Adjacent soils: Lamberjack, Thackery

Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiaquolls

Typical Pedon

Alvada loam, 0 to 1 percent slopes; about 4.5 miles east of Findlay, in Marion Township; about 200 feet north and 760 feet west of the southeast corner of sec. 14, T. 1 N., R. 11 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; 3 percent rock fragments; neutral; clear smooth boundary.

Btg1—10 to 16 inches; dark gray (10YR 4/1) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; few fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; gradual wavy boundary.

Btg2—16 to 21 inches; gray (10YR 5/1) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) masses that have accumulated iron and are in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

Btg3—21 to 28 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 4 percent rock fragments; neutral; gradual wavy boundary.

Bt—28 to 39 inches; brown (10YR 5/3) loam with thin strata of sandy loam; weak medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common medium and coarse faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; slightly effervescent; slightly alkaline; abrupt irregular boundary.

B'tg—39 to 46 inches; grayish brown (10YR 5/2) gravelly loam with thin strata of fine sandy loam and strata of silty clay loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds and bridging sand grains; few medium prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 20 percent rock fragments; strongly effervescent; slightly alkaline; abrupt wavy boundary.

BCg—46 to 50 inches; gray (10YR 5/1) very gravelly sandy loam; weak medium and coarse subangular blocky structure; very friable; few medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 35 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2C—50 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, widely spaced vertical fractures; firm; few medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 35 to 55 inches
Depth to carbonates: 24 to 55 inches
Depth to till: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 2.5Y or is neutral; value of 2 or 3; chroma of 0 to 2
Texture—loam
Content of rock fragments—0 to 10 percent

Btg and Bt horizons:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 or 2; includes chroma of 3 in the lower part
Texture—clay loam, loam, sandy clay loam, or the gravelly analogs of those textures
Content of rock fragments—2 to 25 percent

2C or 2Cg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 to 6
Texture—clay loam, silty clay loam, or loam
Content of rock fragments—1 to 7 percent

Arkport Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Sandy eolian deposits
Landform: Dunes, beach ridges
Position on the landform: Shoulders, summits, backslopes
Slope: 2 to 6 percent
Adjacent soils: Rensselaer, Rimer

Taxonomic classification: Coarse-loamy, mixed, active, mesic Lamellic Hapludalfs

Typical Pedon

Arkport loamy fine sand, 2 to 6 percent slopes (fig. 11); about 4 miles west of Bluffton, in Richland Township, Allen County, Ohio; about 250 feet west and 940 feet north of the southeast corner of sec. 6, T. 2 S., R. 8 E.

Ap—0 to 10 inches; dark brown (10YR 3/3) loamy fine sand, light brownish gray (10YR 6/2) dry; weak medium granular structure; very friable; common very fine roots; few fine distinct black (10YR 2/1) moderately cemented manganese oxide concretions throughout; slightly acid; abrupt wavy boundary.

BE—10 to 18 inches; brown (10YR 5/3) loamy fine sand; weak medium subangular blocky structure; very friable; few very fine roots; few distinct dark grayish brown (10YR 4/2) organic coatings bridging sand grains; few fine distinct black (10YR 2/1) moderately cemented manganese oxide concretions throughout; neutral; abrupt wavy boundary.

E and Bt—18 to 65 inches; light yellowish brown (10YR 6/4) loamy fine sand (E material) intricately patterned with dark yellowish brown (10YR 4/4) fine sandy loam lamellae and bands (Bt material) that are roughly horizontal in orientation; individual lamellae and bands range from $^{1}/_{8}$ inch to 6 inches thick with total thickness of about 16 inches in the horizon; weak coarse subangular blocky structure parting to weak fine granular in the E material; moderate coarse subangular blocky structure parting to moderate fine and medium angular in the Bt material; very friable; few very fine roots; neutral; clear wavy boundary.

C1—65 to 84 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; very few very fine roots; few moderate and coarse distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; strongly effervescent; slightly alkaline; gradual smooth boundary.

C2—84 to 100 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to the uppermost lamellae: 9 to 30 inches
Thickness of the solum: 40 to 100 inches
Depth to carbonates: 36 to 120 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 7.5YR, value of 3 or 4, chroma of 2 or 3
Texture—loamy fine sand

BE or E horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 3 to 6
Texture—loamy fine sand

E and Bt horizon:
Color—E part: hue of 10YR or 7.5YR, value of 4 to 6, chroma of 2 to 4; Bt part: hue of 10YR, 7.5YR, or 5YR; value of 3 to 5; chroma of 3 to 6
Texture—E part: loamy fine sand, fine sand, or loamy very fine sand; Bt part: fine sandy loam or very fine sandy loam

C horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 2 to 4
Texture—sand, fine sand, loamy fine sand, very fine sand, or loamy very fine sand
Content of rock fragments—0 to 10 percent

Aurand Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Rises and flats on beach ridges and lake plains
Position on the landform: Footslopes on beach ridges; summits on lake plains
Slope: 0 to 2 percent
Adjacent soils: On beach ridges—Fox, Oshtemo, Shawtown; on lake plains—Hoytville, Mermill, Pewamo

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Argiudolls

Typical Pedon

Aurand loam, 0 to 2 percent slopes; about 1.2 miles east of McComb, in Portage Township; about 800 feet north and 540 feet east of the southwest corner of sec. 19, T. 2 N., R. 10 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; slightly acid; clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 4/3) clay loam; moderate fine and very fine subangular blocky structure; friable; common fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bt2—17 to 22 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Bt3—22 to 29 inches; yellowish brown (10YR 5/4) loam with thin strata of sandy loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

Btg—29 to 33 inches; grayish brown (10YR 5/2) silty clay loam with thin strata of sandy loam and loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; slightly effervescent, discontinuously in the matrix; slightly alkaline; abrupt wavy boundary.

2BC—33 to 48 inches; dark yellowish brown (10YR 4/4) silty clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common distinct light gray (10YR 7/1) calcium carbonate coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2Cd—48 to 62 inches; brown (10YR 4/3) silty clay loam; massive, widely spaced vertical fractures; very firm; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cdg—62 to 80 inches; dark gray (10YR 4/1) silty clay loam; massive, widely spaced vertical fractures; very firm; common fine and medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 25 to 50 inches

Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 2.5Y or is neutral; value of 2, 2.5, or 3; chroma of 0 to 2
Texture—loam
Content of rock fragments—0 to 10 percent

Bt and Btg horizons:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—loam, clay loam, sandy clay loam, or silty clay loam with strata of fine sandy loam, loamy fine sand, sandy loam, loam, loamy sand, or the gravelly analogs of those textures
Content of rock fragments—0 to 20 percent

2BCg, 2BC, 2Cd, and 2Cdg horizons (if they occur):
Color—hue of 10YR or 2.5Y or is neutral; value of 4 or 5; chroma of 0 to 4
Texture—clay loam, silty clay loam, or clay
Content of rock fragments—1 to 7 percent

Biglick Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow or slow
Parent material: Thin layer of drift over clayey residuum derived from limestone or dolostone
Landform: Flats, rises, and knolls on monadnocks on ground moraines
Position on the landform: Shoulders, summits, backslopes
Slope: 0 to 12 percent
Adjacent soils: Channahon, Milton, Morley

Taxonomic classification: Clayey, illitic, mesic Lithic Hapludalfs

Typical Pedon

Biglick loam, in an area of Biglick-Milton complex, 0 to 2 percent slopes; about 2.75 miles northeast of Vanlue, in Biglick Township; about 2,340 feet north and 620 feet east of the southwest corner of sec. 36, T. 1 N., R. 12 E.

Ap—0 to 10 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine and few medium roots; 2 percent igneous pebbles; slightly alkaline; abrupt smooth boundary.

2Bt—10 to 14 inches; brown (7.5YR 4/4) clay; strong fine and medium subangular blocky structure; firm; common fine roots; many distinct dark brown (10YR 3/4) clay films on faces of peds; 7 percent weathered limestone fragments; slightly alkaline; abrupt irregular boundary.

2R—14 to 16 inches; fractured limestone bedrock with solution cavities extending to a depth of 27 inches; cavities filled with dark yellowish brown (10YR 4/4) fine sandy loam.

Range in Characteristics

Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches

Ap horizon:
Color—hue of 10YR or 7.5Y, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—0 to 7 percent

2Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 or 4
Texture—clay, silty clay, or clay loam
Content of rock fragments—2 to 14 percent

Blount Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Till
Landform: Flats, rises, and knolls on end moraines, ground moraines, and disintegration moraines
Position on the landform: Shoulders, summits, backslopes
Slope: 0 to 4 percent
Adjacent soils: Del Rey, Glynwood, Houcktown, Jenera, Pewamo

Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon

Blount silt loam, 0 to 2 percent slopes; about 1.5 miles east-northeast of Houcktown, in Jackson Township; about 2,375 feet south and 1,910 feet west of the northeast corner of sec. 23, T. 1 S., R. 11 E.

Ap—0 to 9 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; few coarse and common fine and medium roots; 10 percent intermixed areas of brown (10YR 5/3) BE material; 1 percent rock fragments; strongly acid; clear smooth boundary.

BE—9 to 13 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium subangular blocky structure; friable; few medium and coarse and common fine roots; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common faint light brownish gray (10YR 6/2) clay depletions on faces of peds and in pores; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly acid; clear wavy boundary.

Btg1—13 to 21 inches; dark grayish brown (10YR 4/2) silty clay; strong medium subangular blocky structure; firm; few medium and coarse and common fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) and distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few faint light brownish gray (10YR 6/2) clay depletions on faces of peds; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; slightly acid; gradual wavy boundary.

Btg2—21 to 29 inches; grayish brown (10YR 5/2) silty clay; moderate medium subangular blocky structure; firm; common fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) and distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; slightly effervescent, discontinuously in the matrix; neutral; gradual wavy boundary.

Bt1—29 to 34 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common distinct dark gray (10YR 4/1) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; few distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; common distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on faces of peds; few distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 4 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

Bt2—34 to 43 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; few distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron and are in the matrix; common distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on faces of peds; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

BC—43 to 55 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium prismatic structure parting to weak medium and coarse subangular blocky; very firm; few distinct grayish brown (10YR 5/2) coatings on vertical faces of prisms; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on vertical faces of prisms; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; clear irregular boundary.

Cd—55 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive, widely spaced vertical fractures; very firm; few medium distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are along fractures; few distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on vertical faces of fractures; 6 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 60 inches
Depth to carbonates: 19 to 40 inches
Depth to dense material: 30 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 1 to 3
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—silty clay loam, clay loam, silty clay, or clay
Content of rock fragments—2 to 10 percent

Cd or Cdg horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 2 to 4
Texture—silty clay loam or clay loam
Content of rock fragments—5 to 15 percent

Channahon Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Parent material: Loamy drift over limestone or dolostone
Landform: Monadnocks on ground moraines
Position on the landform: Backslopes, shoulders
Slope: 6 to 12 percent
Adjacent soils: Biglick, Milton

Taxonomic classification: Loamy, mixed, mesic Lithic Argiudolls

Typical Pedon

Channahon loam, in an area of Channahon-Biglick complex, 6 to 12 percent slopes; about 1.5 miles northeast of Vanlue, in Biglick Township; about 1,280 feet west and 2,580 feet south of the northeast corner of sec. 34, T. 1 N., R. 12 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; friable; many fine and common medium roots; 5 percent rock fragments; slightly alkaline; abrupt smooth boundary.
Bt1—7 to 11 inches; dark yellowish brown (10YR 4/4) channery loam; weak medium subangular blocky structure; friable; few fine and medium roots; few distinct brown (10YR 4/3) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; 17 percent rock fragments; slightly alkaline; clear wavy boundary.
Bt2—11 to 13 inches; dark yellowish brown (10YR 4/4) channery loam; weak medium subangular blocky structure; friable; few fine and medium roots; common distinct brown (10YR 4/3) clay films on faces of peds; 30 percent rock fragments; slightly alkaline; abrupt wavy boundary.
2R—13 to 15 inches; fractured, light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the mollic epipedon: 6 to 9 inches
Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—loam
Content of rock fragments—0 to 15 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 or 4
Texture—channery loam or channery clay loam
Content of rock fragments—15 to 30 percent

Colwood Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately slow in the solum and moderate in the substratum
Parent material: Stratified glaciolacustrine deposits
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent
Adjacent soils: Darroch, Tuscola

Taxonomic classification: Fine-loamy, mixed, mesic Typic Endoaquolls

Typical Pedon

Colwood loam, 0 to 1 percent slopes; about 2.5 miles northwest of Benton Ridge, in Blanchard Township; about 1,420 feet south and 2,540 feet west of the northeast corner of sec. 15, T. 1 N., R. 9 E.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; slightly acid; clear smooth boundary.
A—8 to 11 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to

moderate medium granular; friable; common fine roots; neutral; clear smooth boundary.

Bg1—11 to 19 inches; dark gray (10YR 4/1) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common fine and medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Bg2—19 to 30 inches; dark grayish brown (10YR 4/2) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common fine and medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; clear wavy boundary.

Bg3—30 to 38 inches; grayish brown (10YR 5/2) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium prominent strong brown (7.5YR 5/6) and many medium and coarse distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; clear wavy boundary.

Bg4—38 to 48 inches; grayish brown (10YR 5/2) loam with thin strata of fine sandy loam and silty clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint gray (10YR 5/1) coatings on faces of peds; common medium prominent strong brown (7.5YR 5/6) and many coarse distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Bg5—48 to 56 inches; grayish brown (10YR 5/2) fine sandy loam with thin strata of loam and silt loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few faint gray (10YR 5/1) coatings on vertical faces of peds; common fine and medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; slightly alkaline; gradual wavy boundary.

Cg—56 to 80 inches; grayish brown (2.5Y 5/2) silt loam with strata of very fine sand; massive; friable; common medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 19 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—loam

Bg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2
Texture—loam, clay loam, sandy clay loam, fine sandy loam, sandy loam, silty clay loam, or silt loam

Cg horizon:
Color—hue of 10YR, 2.5Y or 5Y; value of 4 to 6; chroma of 1 or 2
Texture—silt loam, fine sand, or very fine sand; commonly stratified

Cygnet Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum, moderately rapid in the lower part of the solum and in the upper part of the substratum, and slow or very slow in the lower part of the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Rises on beach ridges and longshore bars on lake plains
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent
Adjacent soils: Fox, Shawtown

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludalfs

Typical Pedon

Cygnet loam; from an area of Cygnet loam, 0 to 3 percent slopes, in Sugar Creek Township, Allen County, Ohio; about 1.5 miles west-northwest of Gomer; about 2,620 feet east and 1,020 feet north of the southwest corner of sec. 19, T. 2 S., R. 6 E.

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak fine and medium subangular blocky structure; friable; common fine and very fine roots; 5 percent rock fragments; slightly acid; clear smooth boundary.

Ap2—4 to 12 inches; dark grayish brown (10YR 4/2) loam, very pale brown (10YR 7/3) dry; weak medium subangular blocky structure; friable; common fine and very fine roots; 5 percent intermixed areas of yellowish brown (10YR 5/4) Bt1 material; common faint dark brown (10YR 3/3) organic coatings on faces of peds; few fine and medium prominent strong brown (7.5YR 5/8) rounded masses that have accumulated iron and are in the matrix; 4 percent rock fragments; strongly acid; abrupt wavy boundary.

Bt1—12 to 19 inches; yellowish brown (10YR 5/4) loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds; many medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common faint brown (10YR 5/3) clay depletions on faces of peds; few distinct black (10YR 2/1) masses that have accumulated manganese oxide and are in the matrix; 4 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—19 to 27 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and few faint dark yellowish brown (10YR 4/4) clay films on vertical faces of peds; common medium prominent strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; common medium distinct gray (10YR 5/1) iron depletions in the matrix; few distinct black (10YR 2/1) masses in which manganese oxide has accumulated on faces of peds; 3 percent rock fragments; strongly acid; clear smooth boundary.

Bt3—27 to 36 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; friable; common fine and very fine roots; few faint brown (10YR 5/3) and many distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common medium prominent strong brown (7.5YR 5/8) and common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct gray (10YR 5/1) iron depletions in the matrix; few distinct black (10YR 2/1) masses in which manganese oxide has accumulated on faces of peds; common medium distinct black (10YR 2/1) rounded masses that have accumulated manganese oxide and are in the matrix; 3 percent rock fragments; moderately acid; gradual wavy boundary.

Bt4—36 to 45 inches; dark yellowish brown (10YR 4/4) clay loam with thin strata of brown (10YR 4/3) sandy clay loam; moderate fine and medium subangular blocky structure; friable; very friable in the sandy clay loam strata; common fine and very fine roots; common distinct grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct dark brown (10YR 3/3) clay bridging in the sandy clay loam strata; common fine distinct yellowish brown (10YR 5/6) and common fine prominent strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

Bt5—45 to 50 inches; yellowish brown (10YR 5/4) sandy clay loam; moderate medium and coarse subangular blocky structure; friable; pockets of dark brown (10YR 3/3) loam; few fine and very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds and dark grayish brown (10YR 4/2) clay films in root channels and pores; many distinct very dark grayish brown (10YR 3/2) clay bridging in the pockets of loam; common fine prominent strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; few fine distinct black (10YR 2/1) masses that have accumulated manganese and are in the matrix; 1 percent rock fragments; neutral; abrupt smooth boundary.

2BC—50 to 56 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium and coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common distinct yellowish brown (10YR 5/6) hypocoats along the light brownish gray (10YR 6/2) carbonate coatings on

vertical faces of peds; 2 percent rock fragments; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Cd1—56 to 68 inches; brown (10YR 5/3) silty clay; massive, widely spaced vertical fractures; very firm; few distinct gray (10YR 5/1) carbonate coatings on faces of fractures; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cd2—68 to 80 inches; brown (10YR 5/3) silty clay loam; massive; very firm; 2 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 33 to 60 inches
Depth to carbonates: 33 to 60 inches
Depth to till: 40 to 60 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—0 to 15 percent

Bt or Btg horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 3 to 6; includes chroma of 2 in the lower part
Texture—clay loam, sandy clay loam, loam, sandy loam, or the gravelly analogs of those textures
Content of rock fragments—0 to 30 percent

C or Cg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—loamy coarse sand, loamy sand, sandy loam, loam, or the gravelly analogs of those textures
Content of rock fragments—0 to 30 percent

2Cd or 2Cdg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—silty clay loam, clay loam, or silty clay
Content of rock fragments—1 to 7 percent

Darroch Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Stratified loamy and silty deposits
Landform: Rises and flats on lake plains and outwash plains
Position on the landform: Summits
Slope: 0 to 2 percent
Adjacent soils: Colwood, Tuscola

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Argiudolls

Typical Pedon

Darroch loam, 0 to 2 percent slopes; about 2 miles northwest of Benton Ridge, in Blanchard Township; about 840 feet east and 2,050 feet south of the northwest corner of sec. 23, T. 1 N., R. 9 E.

Ap—0 to 11 inches; very dark gray (10YR 3/1) loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; 1 percent rock fragments; slightly acid; clear smooth boundary.

Bt1—11 to 15 inches; brown (10YR 5/3) clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bt2—15 to 26 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

Btg—26 to 30 inches; grayish brown (2.5Y 5/2) sandy clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films

on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; many fine and medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

B't1—30 to 34 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds and as bridging between sand grains; common fine and medium distinct grayish brown (2.5Y 5/2) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

B't2—34 to 44 inches; brown (10YR 5/3) loam; weak medium and coarse subangular blocky structure; friable; common faint grayish brown (10YR 5/2) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Cg—44 to 80 inches; grayish brown (10YR 5/2) silt loam with many thin strata of very fine sandy loam; massive; friable; common medium distinct yellowish brown (10YR 5/4) and few medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine and medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture—loam
Content of rock fragments—0 to 3 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—loam, clay loam, silty clay loam, or silt loam in the upper part; sandy clay loam, loam, fine sandy loam, or sandy loam in the lower part
Content of rock fragments—0 to 3 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 6, chroma of 1 to 6
Texture—silt loam or loam; commonly stratified
Content of rock fragments—0 to 15 percent

Del Rey Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow
Parent material: Glaciolacustrine deposits
Landform: Flats and rises on lake plains and disintegration moraines
Position on the landform: Summits, shoulders
Slope: 0 to 3 percent
Adjacent soils: On disintegration moraines—Blount, Pewamo; on lake plains—Patton, Shinrock, Tuscola

Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon

Del Rey silt loam, 0 to 2 percent slopes; about 4 miles northwest of Benton Ridge, in Blanchard Township; about 420 feet west and 1,500 feet north of the southeast corner of sec. 18, T. 1 N., R. 9 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; 5 percent intermixed areas of Bt1 material; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear smooth boundary.

Bt1—10 to 16 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; many

faint grayish brown (10YR 5/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bt2—16 to 23 inches; yellowish brown (10YR 5/4) silty clay; moderate medium subangular blocky structure; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bt3—23 to 29 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bt4—29 to 37 inches; yellowish brown (10YR 5/4) silty clay loam; weak medium subangular blocky structure; friable; common distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; slightly effervescent, discontinuously in the matrix; slightly alkaline; gradual wavy boundary.

Bt5—37 to 52 inches; yellowish brown (10YR 5/4) silt loam with strata of silty clay loam; weak medium subangular blocky structure; friable; common distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on vertical faces of peds; few medium distinct light gray (10YR 7/2) calcium carbonate nodules in the matrix; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—52 to 60 inches; dark yellowish brown (10YR 4/4) silty clay loam with strata of silt loam; weak medium and coarse subangular blocky structure; firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on vertical faces of peds; few medium distinct light gray (10YR 7/2) calcium carbonate nodules in the matrix; strongly effervescent; moderately alkaline; gradual wavy boundary.

C—60 to 80 inches; dark yellowish brown (10YR 4/4) silty clay loam with strata of silt loam; massive, widely spaced vertical fractures; firm; common distinct gray (10YR 5/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 6/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of fractures; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 45 to 60 inches
Depth to carbonates: 22 to 40 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 1 or 2
Texture—silt loam

Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—silty clay loam or silty clay; grades to silt loam in the lower part

C horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6

Texture—silt loam or silty clay loam; commonly stratified

Dunbridge Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Parent material: Loamy drift overlying limestone or dolostone
Landform: Rises and knolls on monadnocks on ground moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 1 to 4 percent
Adjacent soils: Millsdale, Milton, Morley

Taxonomic classification: Fine-loamy, mixed, mesic Mollic Hapludalfs

Typical Pedon

Dunbridge loamy fine sand; from an area of Dunbridge loamy fine sand, 0 to 2 percent slopes, in Troy Township, Wood County, Ohio; about 2.5 miles east of Luckey; about 2,470 feet south and 660 feet west of the northeast corner of section 26, T. 6 N., R. 12 E.

Ap—0 to 8 inches; dark brown (10YR 3/3) loamy fine sand, brown (10YR 5/3) dry; weak fine granular structure; very friable; few rock fragments; slightly acid; abrupt smooth boundary.
BA—8 to 14 inches; yellowish brown (10YR 5/4) fine sandy loam; very weak fine subangular blocky structure; friable; few rock fragments; slightly acid; clear smooth boundary.
Bt—14 to 26 inches; dark brown (7.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure; firm; common faint dark brown (7.5YR 4/4) clay films on faces of peds and bridging sand grains; common weathered limestone fragments; common igneous cobblestones and pebbles; neutral; abrupt wavy boundary.
2C—26 to 28 inches; pale brown (10YR 6/3) extremely cobbly loam; massive; friable; 85 percent rock fragments less than 3 inches in diameter; slightly effervescent; slightly alkaline; abrupt wavy boundary.
2R—28 to 30 inches; pale brown (10YR 6/3) limestone bedrock.

Range in Characteristics

Thickness of the dark epipedon: 6 to 9 inches
Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture—loamy fine sand
Content of rock fragments—1 to 5 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—fine sandy loam, sandy loam, sandy clay loam, clay loam, loam, or the gravelly analogs of those textures
Content of rock fragments—1 to 35 percent

2C horizon:
Color—hue of 10YR or 7.5YR, value of 5 to 7, chroma of 2 to 4
Texture—loam, sandy clay loam, clay loam, or the cobbly, very cobbly, or extremely cobbly analogs of those textures
Content of rock fragments—15 to 90 percent

Elliott Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow in the upper part of the solum and slow or moderately slow in the lower part of the solum and in the substratum
Parent material: Till
Landform: Rises on lake plains
Position on the landform: Summits
Slope: 0 to 2 percent
Adjacent soils: Pewamo

Taxonomic classification: Fine, illitic, mesic Aquic Argiudolls

Typical Pedon

Elliott silt loam, 0 to 2 percent slopes; about 1.75 miles southwest of Benton Ridge, in Union Township; about 2,460 feet east and 540 feet south of the northwest corner of sec. 4, T. 1 S., R. 9 E.

Ap—0 to 12 inches; very dark gray (10YR 3/1) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; common fine roots; 1 percent rock fragments; neutral; clear smooth boundary.
BA—12 to 16 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; firm; common fine roots; common fine distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common

fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

Bt1—16 to 23 inches; brown (10YR 5/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common fine and medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; clear irregular boundary.

Bt2—23 to 30 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 4 percent rock fragments; slightly effervescent, discontinuously in the matrix; neutral; gradual wavy boundary.

Bt3—30 to 36 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to weak medium subangular blocky; firm; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 4 percent rock fragments; slightly effervescent, discontinuously in the matrix; slightly alkaline; gradual wavy boundary.

BC—36 to 50 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; very firm; few fine roots in the upper part of the horizon; common distinct gray (10YR 5/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of peds; 4 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

Cd—50 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive, widely spaced vertical fractures; very firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of fractures; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the solum: 32 to 55 inches
Depth to carbonates: 17 to 40 inches
Depth to dense material: 32 to 55 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture—silt loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture—silty clay loam, silty clay, clay loam, or clay
Content of rock fragments—0 to 10 percent

Cd or Cdg horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 1 to 4
Texture—clay loam or silty clay loam
Content of rock fragments—2 to 10 percent

Flatrock Series

Depth class: Very deep
Drainage class: Moderately well drained

Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Alluvium; alluvium overlying limestone or dolostone in areas of detailed soil map unit FdA, which is a bedrock substratum phase
Landform: Rises, natural levees, and flats on flood plains
Slope: 0 to 2 percent
Adjacent soils: Knoxdale, Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, mesic Fluvaquentic Eutrochrepts

Typical Pedon

Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded; about 5.5 miles south of Mt. Blanchard, in Delaware Township; about 2,220 feet west and 80 feet north of the southeast corner of sec. 36, T. 2 S., R. 11 E.

Ap—0 to 11 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common fine roots; neutral; clear smooth boundary.
Bw1—11 to 15 inches; dark yellowish brown (10YR 4/4) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint brown (10YR 5/3) coatings on faces of peds; few medium distinct yellowish brown (10YR 5/6) and common fine and medium faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; gradual wavy boundary.
Bw2—15 to 27 inches; yellowish brown (10YR 5/4) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint brown (10YR 5/3) and common distinct grayish brown (10YR 5/2) coatings on faces of peds; few medium distinct grayish brown (10YR 5/2) and common fine and medium faint brown (10YR 5/3) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; gradual wavy boundary.
Bw3—27 to 43 inches; dark yellowish brown (10YR 4/4) loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct brown (10YR 5/3) and grayish brown (10YR 5/2) coatings on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; many distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; gradual wavy boundary.
BC—43 to 52 inches; brown (10YR 5/3) loam; weak medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; few medium prominent strong brown (7.5YR 5/6) and common medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; clear wavy boundary.
C—52 to 71 inches; brown (10YR 4/3) loam; massive; friable; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium faint brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; neutral; clear wavy boundary.
Cg—71 to 80 inches; dark grayish brown (10YR 4/2) coarse sandy loam; massive; friable; common medium and coarse faint gray (10YR 5/1) iron depletions in the matrix; few medium and coarse distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 3 percent rock fragments; neutral.

Range in Characteristics

Thickness of the solum: 25 to 55 inches
Depth to carbonates: 40 to more than 80 inches
Depth to bedrock: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit FdA

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 2 or 3
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bw or Bg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—loam, silty clay loam, silt loam, or clay loam; subhorizons of sandy loam in the lower part
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—loam, silt loam, silty clay loam, clay loam, coarse sandy loam, sandy loam, or fine sandy loam; commonly stratified; gravelly analogs of the textures in detailed soil map unit FbA
Content of rock fragments—0 to 15 percent; 15 to 25 percent in detailed soil map unit FbA

Fox Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum and rapid or very rapid in the substratum
Parent material: Loamy deposits or beach deposits overlying stratified sandy and gravelly material
Landform: Rises, flats, and knolls on beach ridges on lake plains and on outwash plains and moraines
Position on the landform: Shoulders, summits, backslopes
Slope: 0 to 12 percent
Adjacent soils: On beach ridges—Aurand, Oshtemo, Vaughnsville; on outwash plains—Thackery, Westland; on moraines—Thackery, Shawtown

Taxonomic classification: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs

Typical Pedon

Fox loam, 2 to 6 percent slopes (fig. 12); about 2.5 miles east-northeast of Van Buren, in Cass Township; 1,440 feet south and 1,560 feet east of the northwest corner of sec. 9, T. 2 N., R. 11 E.

Ap—0 to 9 inches; dark brown (10YR 3/3) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; 5 percent intermixed areas of dark yellowish brown (10YR 4/4) Bt1 material; 5 percent rock fragments; strongly acid; clear wavy boundary.
Bt1—9 to 14 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common faint brown (10YR 4/3) worm channels and casts; 7 percent rock fragments; moderately acid; clear wavy boundary.
Bt2—14 to 20 inches; brown (7.5YR 4/4) gravelly clay loam; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; friable; few fine roots; common distinct dark reddish brown (5YR 3/3) clay films on faces of peds; common distinct brown (10YR 4/3) worm channels and casts; 20 percent rock fragments; moderately acid; clear smooth boundary.
Bt3—20 to 26 inches; dark yellowish brown (10YR 4/4) sandy clay loam with thin strata of sandy loam; weak fine and medium subangular blocky structure parting to moderate fine and medium granular; very friable; few fine roots; common distinct dark reddish brown (5YR 3/3) clay films on faces of peds and as bridging between sand grains; 5 percent rock fragments; moderately acid; clear wavy boundary.
Bt4—26 to 37 inches; dark yellowish brown (10YR 3/4) clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 3/4) clay films on ped faces and as bridging between sand grains; common faint brown (10YR 4/3) worm channels and casts; 10 percent rock fragments; neutral; clear wavy boundary.
2C1—37 to 47 inches; brown (10YR 5/3) loamy coarse sand; single grain; loose; 5 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.
2C2—47 to 68 inches; brown (10YR 5/3) gravelly loamy coarse sand; single grain; loose; 15 percent rock fragments; slightly effervescent; slightly alkaline; clear smooth boundary.
2C3—68 to 80 inches; brown (10YR 5/3) coarse sand; single grain; loose; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 40 inches
Depth to carbonates: 24 to 40 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—2 to 15 percent

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 3 to 5, chroma of 3 or 4
Texture—loam, clay loam, sandy clay loam, or the gravelly analogs of those textures
Content of rock fragments—0 to 35 percent

2C horizon:
Color—hue of 10YR, value of 5 to 7, chroma of 3 or 4

Texture—loamy coarse sand, coarse sand, or the gravelly or very gravelly analogs of those textures; commonly stratified
Content of rock fragments—0 to 50 percent

Fulton Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Glaciolacustrine deposits; glaciolacustrine deposits overlying till in areas of detailed soil map unit FtA, which is a till substratum phase
Landform: Rises on lake plains and disintegration moraines
Position on the landform: Shoulders, summits
Slope: 0 to 2 percent
Adjacent soils: Del Rey, Lucas, Toledo

Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon

Fulton silt loam, 0 to 2 percent slopes; about 5 miles southwest of McComb, in Blanchard Township; 780 feet east and 1,040 feet north of the southwest corner of sec. 18, T. 1 N., R. 9 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; clear smooth boundary.

Bt—8 to 16 inches; yellowish brown (10YR 5/4) silty clay; moderate fine and medium subangular blocky structure; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) organic coatings on vertical faces of peds; many medium distinct gray (10YR 5/1) iron depletions in the matrix; many fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; clear wavy boundary.

Btg1—16 to 22 inches; grayish brown (2.5Y 5/2) silty clay; moderate fine and medium subangular blocky structure; firm; few fine roots; many distinct gray (10YR 5/1) clay films on faces of peds; common prominent black (10YR 2/1) masses in which manganese oxide has accumulated on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; slightly acid; gradual wavy boundary.

Btg2—22 to 29 inches; grayish brown (2.5Y 5/2) silty clay; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; few prominent black (10YR 2/1) masses in which manganese oxide has accumulated on faces of peds; common medium and coarse faint gray (10YR 5/1) iron depletions in the matrix; many medium and coarse distinct dark yellowish brown (10YR 4/4) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; neutral; gradual wavy boundary.

B't1—29 to 36 inches; dark yellowish brown (10YR 4/4) silty clay; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots; many distinct gray (10YR 5/1) clay films on faces of peds; few distinct black (10YR 2/1) masses in which manganese oxide has accumulated on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; neutral; gradual wavy boundary.

B't2—36 to 42 inches; dark yellowish brown (10YR 4/4) silty clay; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium and fine distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common medium and fine distinct gray (10YR 5/1) iron depletions in the matrix; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; common medium distinct light gray (10YR 7/2) moderately cemented calcium carbonate nodules in the matrix; strongly

effervescent; slightly alkaline; gradual wavy boundary.

BC—42 to 60 inches; dark yellowish brown (10YR 4/4) silty clay with thin strata of silt loam and silty clay loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; many distinct gray (10YR 5/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on vertical faces of peds; common medium distinct light gray (10YR 7/2) moderately cemented calcium carbonate nodules in the matrix; strongly effervescent; moderately alkaline; gradual wavy boundary.

C—60 to 80 inches; brown (10YR 4/3) silty clay; massive, widely spaced vertical fractures; varved; very firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions and yellowish brown (10YR 5/6) masses that have accumulated iron and are along fractures; few prominent white (10YR 8/1) masses that have accumulated calcium carbonate and are on faces of fractures; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 22 to 40 inches
Depth to till: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit FtA
Depth to dense material: 60 to 80 inches in areas of detailed soil map unit FtA
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 or 2
Texture—silt loam

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—silty clay or clay; thin strata of silty clay loam in some pedons

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—silty clay, clay, or silty clay loam

2Cd horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 3 to 6
Texture—clay, clay loam, or silty clay loam
Content of rock fragments—1 to 15 percent

Gallman Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid in the solum and moderately rapid or rapid in the substratum
Parent material: Poorly sorted outwash
Landform: Knolls in outwash areas on end moraines and ground moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 2 to 6 percent
Adjacent soils: Houcktown, Oshtemo, Rensselaer, Westland

Taxonomic classification: Fine-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon

Gallman loam, 2 to 6 percent slopes; about 2.5 miles west of Mt. Cory, in Union Township; about 2,240 feet east and 760 feet south of the northwest corner of sec. 30, T. 1 S., R. 9 E.

Ap—0 to 10 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common fine and few medium roots; 5 percent rock fragments; slightly acid; clear smooth boundary.

Bt1—10 to 18 inches; brown (10YR 4/3) loam; moderate medium subangular blocky structure; friable; common fine roots; common faint brown (10YR 4/3) clay films on faces of peds; 5 percent rock fragments; neutral; clear wavy boundary.

Bt2—18 to 30 inches; brown (10YR 4/3) loam; moderate medium subangular blocky structure; friable; few fine roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 10 percent rock fragments; neutral; clear wavy boundary.

Bt3—30 to 42 inches; brown (10YR 4/3) gravelly loam; weak medium and coarse subangular blocky structure; friable; few fine roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds and common faint brown (10YR 4/3) clay bridging between sand grains; 20 percent rock fragments; neutral; gradual wavy boundary.

Bt4—42 to 61 inches; brown (10YR 4/3) gravelly sandy loam with thin strata of sandy loam; weak medium and coarse subangular blocky structure; very friable; few fine roots in the upper part; common faint dark yellowish brown (10YR 4/4) clay bridging between sand grains; 20 percent rock fragments; neutral; gradual wavy boundary.

C—61 to 80 inches; brown (10YR 5/3) gravelly sandy loam; massive; very friable; 30 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 55 to 120 inches
Depth to carbonates: 55 to 120 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 2 or 3
Texture—loam
Content of rock fragments—0 to 15 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 3 or 4
Texture—loam, clay loam, sandy clay loam, sandy loam, or the gravelly analogs of those textures
Content of rock fragments—2 to 30 percent

C horizon:
Color—hue of 10YR, 7.5YR, or 2.5Y; value of 4 to 6; chroma of 2 to 4
Texture—sandy loam, loamy sand, sand, or the gravelly or very gravelly analogs of those textures
Content of rock fragments—2 to 40 percent

Gilford Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately rapid in the upper part of the solum and rapid in the lower part of the solum and in the substratum
Parent material: Loamy and sandy deposits
Landform: Flats and depressions on outwash plains
Slope: 0 to 1 percent
Adjacent soils: Adrian, Ottokee

Taxonomic classification: Coarse-loamy, mixed, mesic Typic Endoaquolls

Typical Pedon

Gilford mucky loam, 0 to 1 percent slopes; about 4.3 miles northeast of Vanlue, in Biglick Township; 780 feet south and 320 feet west of the northeast corner of sec. 25, T. 1 N., R. 12 E.

Ap—0 to 12 inches; black (10YR 2/1) mucky loam, very dark grayish brown (10YR 3/2) dry; weak fine and medium granular structure; very friable; common fine roots; common fine prominent brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; moderately acid; abrupt smooth boundary.

Bg1—12 to 21 inches; dark gray (10YR 4/1) fine sandy loam; weak fine and medium subangular blocky structure; very friable; common fine roots; common faint very dark gray (10YR 3/1) organic coatings in old root channels and pores; common fine and medium prominent strong brown (7.5YR 5/6) and common medium and coarse prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along old root channels and in pores; common fine and medium faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; slightly acid; clear wavy boundary.

Bg2—21 to 27 inches; gray (10YR 5/1) loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct very dark gray (10YR 3/1) organic coatings in old root channels and pores; common faint dark gray (10YR 4/1) coatings on vertical faces of peds; common medium prominent strong brown (7.5YR 5/6) and common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along old root channels and in pores; common fine and medium faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

BC—27 to 36 inches; brown (10YR 5/3) loamy fine sand; weak medium and coarse subangular blocky structure; very friable; few fine roots; common distinct very dark gray (10YR 3/1) organic coatings in old root channels and pores; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are oriented along old root channels and in pores; many medium and coarse faint yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common fine and medium faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Cg1—36 to 64 inches; grayish brown (10YR 5/2) fine sand with thin strata of silty clay loam; single

grain; loose; few fine roots; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are oriented along old root channels and in pores in the upper part of this horizon; many medium and coarse faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; strongly effervescent; slightly alkaline; gradual wavy boundary.

Cg2—64 to 80 inches; dark grayish brown (10YR 4/2) sand with strata of coarse sand; single grain; loose; common medium and coarse distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 2 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 16 inches
Thickness of the solum: 30 to 40 inches
Depth to carbonates: 30 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—mucky loam
Content of rock fragments—0 to 3 percent

Bg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2
Texture—fine sandy loam, sandy loam, or loam
Content of rock fragments—0 to 3 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 3
Texture—loamy sand, sand, coarse sand, or fine sand
Content of rock fragments—0 to 3 percent

Glynwood Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Till; till overlying limestone or dolostone in areas of detailed soil map unit GmA, which is a bedrock substratum phase
Landform: Dissected areas and knolls on end moraines, ground moraines, and disintegration moraines; on rises on monadnocks on ground moraines in areas of detailed soil map unit GmA
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 12 percent
Adjacent soils: On end moraines and ground moraines—Blount, Houcktown, Pewamo; on disintegration moraines—Blount, Houcktown, Jenera, Pewamo, Shinrock

Taxonomic classification: Fine, illitic, mesic Aquic Hapludalfs

Typical Pedon

Glynwood silt loam, 2 to 6 percent slopes; about 1.5 miles southeast of Vanlue, in Amanda Township; about 1,760 feet west and 1,460 feet north of the southeast corner of sec. 15, T. 1 S., R. 12 E.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; few medium and common fine roots; 5 percent intermixed areas of yellowish brown (10YR 5/6) Bt1 material; less than 1 percent rock fragments; neutral; clear smooth boundary.

Bt1—9 to 13 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium and fine subangular blocky structure; friable; common fine roots; few distinct yellowish brown (10YR 5/4) clay films on faces of peds; common distinct brown (10YR 4/3) coatings in worm channels; common fine prominent grayish brown (10YR 5/2) iron depletions in the matrix; common distinct brown (10YR 5/3) clay depletions on vertical faces of peds; few medium faint strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine prominent very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Bt2—13 to 21 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium subangular blocky structure; firm; common fine roots; common distinct brown (10YR 5/3) and few faint brown (10YR 4/3) clay films on faces of peds; few faint brown (10YR 4/3) coatings in worm channels; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few faint brown (10YR 5/3) clay depletions on vertical faces of peds; common fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds;

2 percent rock fragments; slightly acid; gradual wavy boundary.

Bt3—21 to 30 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium subangular blocky structure; firm; few fine roots; common distinct dark grayish brown (10YR 4/2) and common faint brown (10YR 4/3) clay films on faces of peds; few faint brown (10YR 4/3) coatings in worm channels; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; neutral; gradual wavy boundary.

Bt4—30 to 37 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct grayish brown (10YR 5/2) and common faint brown (10YR 5/3) clay films on faces of peds; few distinct brown (10YR 4/3) coatings in worm channels; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; 3 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—37 to 47 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots in the upper part of this horizon; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; 4 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

Cd—47 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, widely spaced vertical fractures; very firm; common medium distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are oriented along faces of fractures; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 25 to 50 inches
Depth to carbonates: 16 to 40 inches
Depth to dense material: 25 to 50 inches
Depth to bedrock: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit GmA

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—silt loam, loam, clay loam, or silty clay loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—silty clay, clay, clay loam, or silty clay loam
Content of rock fragments—0 to 10 percent

Cd or Cdg horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 2 to 6
Texture—clay loam, silty clay loam, or loam
Content of rock fragments—1 to 15 percent

Harrod Series

Depth class: Moderately deep
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Alluvium overlying limestone or dolostone
Landform: Natural levees and flats on flood plains
Slope: 0 to 1 percent
Adjacent soils: Flatrock, Medway, Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Harrod silt loam; from an area of Harrod silt loam, 0 to 1 percent slopes, frequently flooded, in Auglaize Township, Allen County, Ohio; about 0.5 mile east of Westminster; about 1,440 feet north and 1,550 feet

east of the southwest corner of sec. 17, T. 4 S., R. 8 E.

A—0 to 11 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; weak fine and very fine subangular blocky structure; friable; many fine and very fine roots and common medium roots; few very fine prominent white (10YR 8/1) soft masses that have accumulated calcium carbonate and are in the matrix; very slightly effervescent; slightly alkaline; clear smooth boundary.

Bw1—11 to 14 inches; dark grayish brown (10YR 4/2) loam; moderate fine and medium subangular blocky structure; friable; common medium, fine, and very fine roots; common faint very dark grayish brown (10YR 3/2) organic coatings on faces of peds; very few fine prominent reddish brown (5YR 4/4) masses that have accumulated iron and manganese and are in the matrix; slightly effervescent; moderately alkaline; clear smooth boundary.

Bw2—14 to 19 inches; dark grayish brown (10YR 4/2) loam; weak medium prismatic structure parting to moderate medium subangular blocky; friable; common fine and very fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; very few faint black (10YR 2/1) masses that have accumulated manganese and are on faces of peds; common fine prominent yellowish brown (10YR 5/6) and distinct brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; slightly effervescent; moderately alkaline; clear wavy boundary.

Bw3—19 to 27 inches; dark grayish brown (10YR 4/2) loam; moderate medium subangular blocky structure; friable; common fine and very fine roots; few faint gray (10YR 5/1) iron depletions on faces of peds; very few faint black (10YR 2/1) masses that have accumulated manganese and are on faces of peds; common fine prominent yellowish brown (10YR 5/6) and few fine prominent reddish brown (5YR 4/4) masses that have accumulated iron and are in the matrix; 4 percent limestone fragments; slightly effervescent; moderately alkaline; clear wavy boundary.

Bg—27 to 31 inches; gray (10YR 5/1) loam with strata of sandy loam; weak medium and coarse subangular blocky structure; friable; very few prominent brown (7.5YR 4/4) masses that have accumulated iron and are on faces of peds; very few fine prominent brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; 2 percent angular limestone channers; 9 percent subangular limestone fragments; slightly effervescent; moderately alkaline; abrupt smooth boundary.

2R—31 inches; white (10YR 8/1) limestone bedrock.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the solum: 20 to 40 inches
Depth to carbonates: 0 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—silt loam
Content of rock fragments—0 to 7 percent

Bw horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—silt loam, loam, clay loam, or sandy loam
Content of rock fragments—0 to 15 percent

Bg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 or 2
Texture—loam or sandy loam
Content of rock fragments—5 to 15 percent

Haskins Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Rises on lake plains
Position on the landform: Shoulders, summits
Slope: 0 to 2 percent
Adjacent soils: Hoytville, Mermill, Nappanee, Houcktown

Taxonomic classification: Fine-loamy, mixed, mesic Aeric Epiaqualfs

Typical Pedon

Haskins loam, 0 to 2 percent slopes; about 1 mile west-northwest of McComb, in Pleasant Township; about 1,040 feet north and 1,840 feet west of the southeast corner of sec. 22, T. 2 N., R. 9 E.

Ap—0 to 9 inches; dark brown (10YR 3/3) loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; friable; common fine

roots; 5 percent intermixed areas of grayish brown (10YR 5/2) BEg material; 2 percent rock fragments; moderately acid; abrupt smooth boundary.

BEg—9 to 13 inches; grayish brown (10YR 5/2) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few faint light brownish gray (10YR 6/2) clay films on faces of peds; few faint dark grayish brown (10YR 4/2) wormcasts and organic coatings in pores; few medium prominent strong brown (7.5YR 5/6) and many medium faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; common distinct brown (7.5YR 4/4) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; moderately acid; clear wavy boundary.

Btg—13 to 18 inches; grayish brown (10YR 5/2) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many faint grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) clay films on faces of peds; few faint dark grayish brown (10YR 4/2) wormcasts and organic coatings in pores; many medium prominent yellowish brown (10YR 5/6) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct dark brown (7.5YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; slightly acid; clear wavy boundary.

Bt1—18 to 24 inches; brown (10YR 5/3) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds and lining old root channels; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) and common coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct dark brown (7.5YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; slightly acid; gradual wavy boundary.

Bt2—24 to 30 inches; yellowish brown (10YR 5/6) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common prominent dark grayish brown (10YR 4/2) clay films on faces of peds and lining old root channels; common medium prominent dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/4) and few medium faint strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few prominent dark brown (7.5YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; neutral; clear smooth boundary.

B'tg—30 to 36 inches; dark grayish brown (10YR 4/2) loam with strata of yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; few fine roots; few faint dark grayish brown (10YR 4/2) clay films on faces of peds and bridging between sand grains in the loam material; common medium prominent yellowish brown (10YR 5/6) and distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few faint dark brown (7.5YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 6 percent rock fragments in the loam material and 1 percent rock fragments in the fine sandy loam strata; neutral; abrupt smooth boundary.

2BC—36 to 52 inches; yellowish brown (10YR 5/4) clay; weak medium and coarse subangular blocky structure; very firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual irregular boundary.

2Cd—52 to 80 inches; dark yellowish brown (10YR 4/4) clay; massive, widely spaced vertical fractures; very firm; few distinct gray (10YR 6/1) coatings on faces of fractures; few fine distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 55 inches
Depth to carbonates: 25 to 40 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 1 to 3
Texture—loam or fine sandy loam
Content of rock fragments—0 to 10 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 6
Texture—clay loam, sandy clay loam, loam, or the gravelly analogs of the textures
Content of rock fragments—0 to 20 percent

2BC or 2BCg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

2Cd or 2Cdg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

Houcktown Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum, moderately slow or slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy, water-sorted deposits and the underlying till
Landform: Rises and knolls on end moraines, ground moraines, lake plains, and disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 6 percent
Adjacent soils: On end moraines and ground moraines—Blount, Glynwood, Pewamo; on disintegration moraines—Glynwood, Jenera; on lake plains—Haskins, Jenera, Mermill, Shawtown

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludalfs

Typical Pedon

Houcktown loam, 2 to 6 percent slopes (fig. 13); about 2 miles southwest of Benton Ridge, in Union Township; about 2,200 feet north and 480 feet west of the southeast corner of section 4, T. 1 S., R. 9 E.

Ap—0 to 10 inches; dark brown (10YR 3/3) loam, light gray (10YR 7/2) dry; weak fine and medium granular structure; friable; common fine and few medium roots; few fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 6 percent rock fragments; moderately acid; abrupt smooth boundary.

Bt1—10 to 16 inches; dark yellowish brown (10YR 4/4) loam; weak fine and medium subangular blocky structure; friable; common fine roots; few faint brown (10YR 4/3) clay films on faces of peds; common distinct brown (10YR 5/3) coatings on faces of peds; few distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium and coarse faint brown (10YR 5/3) and few fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 8 percent rock fragments; slightly acid; gradual wavy boundary.

Bt2—16 to 20 inches; yellowish brown (10YR 5/4) loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; many medium and coarse faint dark yellowish brown (10YR 4/4) and common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 6 percent rock fragments; slightly acid; clear wavy boundary.

Bt3—20 to 27 inches; brown (10YR 5/3) sandy clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; many medium and coarse faint dark yellowish brown (10YR 4/4) and common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 9 percent rock fragments; neutral; clear smooth boundary.

Bt4—27 to 30 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse

subangular blocky structure; friable; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct dark gray (10YR 4/1) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) and faint dark brown (7.5YR 3/4) masses that have accumulated iron and are in the matrix; common medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 11 percent rock fragments; neutral; abrupt smooth boundary.

2Bt5—30 to 34 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark gray (10YR 4/1) clay films on faces of peds and in pores; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; slightly effervescent, discontinuously in the matrix; slightly alkaline; gradual wavy boundary.

2BC—34 to 50 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on vertical faces of peds; 4 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2Cd1—50 to 70 inches; yellowish brown (10YR 5/4) silt loam; massive, widely spaced vertical fractures; very firm; common distinct grayish brown (10YR 5/2) coatings on faces of fractures; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on faces of fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cd2—70 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, widely spaced vertical fractures; very firm; few distinct grayish brown (10YR 5/2) coatings on faces of fractures; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common distinct light brownish gray (10YR 6/2) masses that have accumulated calcium carbonate and are on faces of fractures; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 25 to 45 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—0 to 10 percent

Bt or Btg horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 2 to 4
Texture—loam, clay loam, sandy clay loam, or the gravelly analogs of those textures; strata of fine sandy loam, sandy loam, silt loam, or silty clay loam in some pedons
Content of rock fragments—0 to 25 percent

2Bt and 2BC horizons:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 3 or 4
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

2Cd horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 3 or 4

Texture—clay loam, silt loam, loam, or silty clay loam
Content of rock fragments—1 to 7 percent

Hoytville Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent
Adjacent soils: Aurand, Mermill, Mortimer, Nappanee, St. Clair

Taxonomic classification: Fine, illitic, mesic Mollic Epiaqualfs

Typical Pedon

Hoytville silty clay, 0 to 1 percent slopes; about 1 mile northwest of McComb, in Pleasant Township; about 2,300 feet east and 1,220 feet south of the northwest corner of sec. 22, T. 2 N., R. 9 E.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silty clay, grayish brown (10YR 5/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; firm; common fine roots; few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 10 percent intermixed areas of gray (10YR 5/1) Btg1 material; 1 percent rock fragments; neutral; abrupt smooth boundary.

Btg1—8 to 16 inches; gray (10YR 5/1) clay; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common medium distinct yellowish brown (10YR 5/4) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; neutral; gradual wavy boundary.

Btg2—16 to 25 inches; gray (10YR 5/1) clay; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings lining old root channels; common medium distinct yellowish brown (10YR 5/4) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; slightly alkaline; gradual wavy boundary.

Btg3—25 to 34 inches; grayish brown (10YR 5/2) clay; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings lining old root channels; many medium distinct yellowish brown (10YR 5/4) and few medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; slightly alkaline; gradual wavy boundary.

Btg4—34 to 41 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to weak medium subangular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on vertical faces of prisms; few distinct very dark grayish brown (10YR 3/2) organic coatings lining old root channels; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; many medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few faint light gray (10YR 7/2) calcium carbonate concretions in the matrix; 3 percent rock fragments; slightly effervescent, discontinuously in the matrix; moderately alkaline; clear wavy boundary.

Bt—41 to 52 inches; yellowish brown (10YR 5/4) clay; weak medium and coarse prismatic structure parting to weak medium subangular blocky; firm; few distinct gray (10YR 5/1) clay films on vertical faces of peds; few distinct light gray (10YR 7/2) calcium carbonate coatings on faces of peds; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 4 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

BC—52 to 64 inches; yellowish brown (10YR 5/4) clay; weak coarse subangular blocky structure; very firm; few distinct gray (10YR 5/1) coatings on vertical faces of peds; few distinct light gray (10YR 7/2) calcium carbonate coatings on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct (10YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cd1—64 to 72 inches; yellowish brown (10YR 5/4) clay; massive, widely spaced vertical fractures; very firm; few distinct gray (10YR 5/1) coatings on faces of fractures; few distinct light gray (10YR 7/2) calcium carbonate coatings on faces of fractures; common medium distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; few medium distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cd2—72 to 80 inches; yellowish brown (10YR 5/4) clay; massive, widely spaced vertical fractures; very firm; few medium distinct gray (10YR 5/1) iron depletions and yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; few distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the dark surface layer: 7 to 9 inches
Thickness of the solum: 40 to 65 inches
Depth to carbonates: 30 to 55 inches
Depth to dense material: 40 to 65 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 2.5Y; value of 2, 2.5, or 3; chroma of 1 or 2
Texture—silty clay or silty clay loam
Content of rock fragments—0 to 5 percent

Btg or Bt horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 or 5; chroma of 1 or 2; includes chroma of 3 or 4 in the lower part
Texture—clay or silty clay
Content of rock fragments—1 to 10 percent

BC or BCg horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 or 5; chroma of 1 to 4
Texture—clay loam, silty clay loam, silty clay, or clay
Content of rock fragments—2 to 10 percent

Cd or Cdg horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; chroma of 1 to 6
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—2 to 10 percent

Jenera Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum and slow or moderately slow in the lower part of the solum and in the substratum; slow or very slow in the lower part of the solum and in the substratum in detailed soil map units BrA, HrB, and JfB
Parent material: Stratified loamy and silty glaciolacustrine deposits and the underlying till
Landform: Rises and knolls on lake plains, disintegration moraines, and ground moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 6 percent
Adjacent soils: On ground moraines—Blount, Houcktown; on disintegration moraines—Blount, Glynwood, Pewamo, Shinrock; on lake plains—Rensselaer, Tiderishi, Vanlue

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludalfs

Typical Pedon

Jenera fine sandy loam, 0 to 2 percent slopes; about 3.5 miles northwest of Benton Ridge, in Blanchard Township; about 375 feet west and 125 feet south of the northeast corner of sec. 19, T. 1 N., R. 9 E.

Ap—0 to 10 inches; brown (10YR 4/3) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; very friable; common fine roots; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; slightly acid; clear smooth boundary.

Bt1—10 to 16 inches; yellowish brown (10YR 5/4) sandy clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common faint brown (10YR 5/3) clay films on faces of peds; common distinct brown (10YR 4/3) organic coatings on vertical faces of peds; common distinct light brownish gray (10YR 6/2) iron depletions in the matrix; common medium and coarse distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bt2—16 to 24 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint brown (10YR 4/3) and few distinct grayish brown (10YR 4/2) clay films on faces of peds; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common fine and medium distinct black (10YR 2/1) masses that have accumulated manganese and are on faces of peds; neutral; clear wavy boundary.

Bt3—24 to 31 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common fine and medium distinct black (10YR 2/1) masses in which manganese oxide has accumulated on faces of peds; neutral; gradual wavy boundary.

Bt4—31 to 37 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common fine and medium distinct black (10YR 2/1) masses in which manganese oxide has accumulated on faces of peds; neutral; abrupt irregular boundary.

2BC1—37 to 50 inches; brown (10YR 4/3) silty clay loam with thin strata of silt loam; weak coarse subangular blocky structure; firm; common distinct gray (10YR 5/1) coatings on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on faces of peds; strongly effervescent; slightly alkaline; clear wavy boundary.

3BC2—50 to 56 inches; brown (10YR 4/3) clay loam; weak medium and coarse subangular blocky structure; firm; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; few medium and coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual irregular boundary.

3C—56 to 80 inches; brown (10YR 4/3) clay loam; massive and weak medium platy structure; firm; common fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the loamy mantle: 20 to 45 inches
Thickness of the solum: 40 to 65 inches
Depth to carbonates: 25 to 55 inches
Depth to till: 40 to 60 inches
Depth to dense material: 40 to 60 inches in detailed soil map units BrA, HrB, and JfB
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—fine sandy loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 to 6
Texture—loam, sandy clay loam, or clay loam; thin strata of fine sandy loam, sandy loam, silt loam, or silty clay loam in some pedons
Content of rock fragments—0 to 5 percent

2Bt or 2BC horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—silty clay loam or silt loam
Content of rock fragments—typically none

3BC, 3C, or 3Cd horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—clay loam, silty clay loam, or loam
Content of rock fragments—1 to 7 percent

Joliet Series

Depth class: Shallow
Drainage class: Poorly drained
Permeability: Moderate
Parent material: Loamy drift overlying limestone or dolostone
Landform: Depressions, drainageways, and flats on ground moraines and stream terraces
Slope: 0 to 1 percent
Adjacent soils: Millsdale, Randolph

Taxonomic classification: Loamy, mixed, mesic Lithic Endoaquolls

Typical Pedon

Joliet loam, 0 to 1 percent slopes; about 4 miles east of Benton Ridge, in Liberty Township; about 1,300 feet west and 1,280 north of the southeast corner of sec. 33, T. 1 N., R. 10 E.

Ap—0 to 9 inches; black (10YR 2/1) loam, very dark gray (10YR 3/1) dry; weak medium subangular blocky structure; friable; many fine roots; few rock fragments; neutral; gradual wavy boundary.

Btg—9 to 17 inches; very dark gray (10YR 3/1) clay loam, gray (10YR 5/1) dry; moderate medium subangular blocky structure; firm; common fine roots; common medium faint dark grayish brown (10YR 4/2) masses that have accumulated iron and are in the matrix; few rock fragments; neutral; abrupt wavy boundary.

Cg—17 to 18 inches; dark grayish brown (10YR 4/2) fine sandy loam; massive; friable; few fine roots; few rock fragments; slightly alkaline; abrupt smooth boundary.

2R—18 to 20 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the mollic epipedon: 7 to 17 inches
Thickness of the solum: 10 to 20 inches
Depth to bedrock: 10 to 20 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—loam
Content of rock fragments—0 to 15 percent

Btg horizon:
Color—hue of 10YR, 2.5Y, or 5Y or is neutral; value of 3 to 5; chroma of 0 to 2
Texture—clay loam, loam, or silty clay loam
Content of rock fragments—0 to 15 percent

Cg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 or 2
Texture—fine sandy loam, sandy loam, or loamy sand
Content of rock fragments—0 to 15 percent

The Joliet soils in Hancock County have an argillic horizon, or Bt horizon, that is not typical for the series. In addition, they have more sand and less clay in the Cg horizon than is typical. They classify as loamy, mixed, mesic Lithic Argiaquolls and are taxadjuncts to the Joliet series. These differences, however, do not significantly affect the use and management of the soils.

Knoxdale Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Alluvium
Landform: Natural levees, flats, and rises on flood plains
Slope: 0 to 2 percent
Adjacent soils: Flatrock, Shoals, Sloan

Taxonomic classification: Fine-loamy, mixed, mesic Dystric Fluventic Eutrochrepts

Typical Pedon

Knoxdale silt loam, 0 to 2 percent slopes, occasionally flooded; about 4.5 miles south of Mt. Blanchard, in Delaware Township; about 380 feet east and 260 feet north of the southwest corner of sec. 25, T. 2 S., R. 11 E.

Ap—0 to 11 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak medium subangular blocky structure parting to weak fine and medium granular; friable; common fine roots; neutral; clear smooth boundary.

Bw1—11 to 16 inches; brown (10YR 4/3) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark brown (10YR 3/3) organic coatings on faces of peds; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw2—16 to 22 inches; brown (10YR 4/3) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few faint dark brown (10YR 3/3) organic coatings on faces of peds; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw3—22 to 30 inches; dark yellowish brown (10YR 4/4) loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common faint brown (10YR 4/3) coatings on faces of peds; few fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bw4—30 to 41 inches; brown (10YR 4/3) loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few faint brown (10YR 4/3) coatings on faces of peds; few medium faint brown (10YR 5/3) and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw5—41 to 47 inches; brown (10YR 4/3) loam with strata of sandy loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few faint dark grayish brown (10YR 4/2) coatings on faces of peds; common fine and medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) and common medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

C—47 to 72 inches; brown (10YR 5/3) loam with thin strata of silt loam and sandy loam; massive; friable; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

Cg—72 to 80 inches; dark gray (10YR 4/1) sandy loam with thin strata of loam and silt loam; massive; very friable; common medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 3 percent rock fragments; neutral.

Range in Characteristics

Thickness of the solum: 25 to 55 inches
Depth to carbonates: 50 to more than 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 2 to 4
Texture—silt loam
Content of rock fragments—0 to 5 percent

Bw horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—silt loam or loam; subhorizons of clay loam and silty clay loam
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4; chroma includes 1 or 2 in the lower part of this horizon
Texture—loam, sandy loam, silt loam, or fine sandy loam; commonly stratified
Content of rock fragments—0 to 15 percent

Lamberjack Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the loamy solum, rapid in the gravelly and sandy substratum, and slow or very slow in the till substratum
Parent material: Loamy, sandy, and gravelly outwash overlying till
Landform: Rises on outwash plains and in outwash areas on end moraines and ground moraines
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent
Adjacent soils: Alvada, Fox, Oshtemo, Shawtown, Thackery

Taxonomic classification: Fine-loamy, mixed, mesic Aeric Epiaqualfs

Typical Pedon

Lamberjack loam, 0 to 2 percent slopes; about 4 miles east of Findlay, in Marion Township; about 2,040 feet west and 360 feet north of the southeast corner of sec. 14, T. 1 N., R. 11 E.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; 5 percent rock fragments; moderately acid; clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 5/3) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; slightly acid; gradual wavy boundary.

Bt2—17 to 24 inches; brown (10YR 5/3) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; many fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium faint dark yellowish brown (10YR 4/4) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; neutral; gradual wavy boundary.

Bt3—24 to 32 inches; brown (10YR 5/3) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; neutral; gradual wavy boundary.

Btg1—32 to 39 inches; grayish brown (10YR 5/2) loam; weak medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) clay films on faces of peds; many faint brown (10YR 5/3) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 10 percent rock fragments; neutral; clear smooth boundary.

2Btg2—39 to 44 inches; dark gray (10YR 4/1) gravelly loam; weak medium subangular blocky structure; friable; common faint dark gray (10YR 4/1) clay bridging between sand grains; few medium distinct brown (10YR 5/3) masses that have accumulated iron and are in the matrix; 15 percent rock fragments; slightly effervescent, discontinuously in the matrix; slightly alkaline; clear smooth boundary.

2Cg1—44 to 50 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam; single grain; loose; 25 percent rock fragments; strongly effervescent; slightly alkaline; gradual smooth boundary.

2Cg2—50 to 56 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand; single grain; loose; 25 percent rock fragments; strongly effervescent; moderately alkaline; gradual smooth boundary.

2Cg3—56 to 62 inches; grayish brown (10YR 5/2) very gravelly loamy coarse sand; single grain; loose; 50 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

3Cdg—62 to 80 inches; dark gray (10YR 4/1) loam; massive; very firm; few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 5 percent

rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—2 to 14 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—loam, clay loam, or sandy clay loam
Content of rock fragments—2 to 14 percent

2Bt or 2Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—gravelly analogs of loam, clay loam, sandy clay loam, or sandy loam
Content of rock fragments—15 to 35 percent

2C or 2Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—gravelly or very gravelly analogs of loamy sand, loamy coarse sand, sandy loam, or coarse sandy loam
Content of rock fragments—15 to 60 percent

3Cd or 3Cdg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—clay loam, loam, silt loam, or silty clay loam
Content of rock fragments—1 to 7 percent

Lucas Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow or very slow
Parent material: Glaciolacustrine deposits
Landform: Knolls in dissected areas on lake plains; a few areas on disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 2 to 6 percent
Adjacent soils: Fulton, Toledo

Taxonomic classification: Fine, illitic, mesic Oxyaquic Hapludalfs

Typical Pedon

Lucas silty clay loam, 2 to 6 percent slopes, eroded; about 4.5 miles southwest of McComb, in Blanchard Township; about 1,070 feet east and 330 feet south of the northwest corner of sec. 7, T. 1 N., R. 9 E.

Ap—0 to 7 inches; brown (10YR 5/3) silty clay loam, very pale brown (10YR 7/3) dry; moderate fine and medium granular structure; friable; few coarse and common fine and medium roots; 25 percent intermixed areas of yellowish brown (10YR 5/4) Bt1 material; strongly acid; clear smooth boundary.

Bt1—7 to 13 inches; yellowish brown (10YR 5/4) silty clay; moderate fine and medium subangular blocky structure; firm; few coarse and common fine and medium roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; slightly acid; gradual wavy boundary.

Bt2—13 to 18 inches; yellowish brown (10YR 5/4) silty clay; moderate fine and medium subangular blocky structure; firm; common fine and medium roots; common faint brown (10YR 5/3) clay films on faces of peds; few fine faint brown (10YR 5/3) and common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; gradual wavy boundary.

Bt3—18 to 23 inches; yellowish brown (10YR 5/4) silty clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few medium and common fine roots; common faint brown (10YR 5/3) clay films on faces of peds; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct gray (10YR 5/1) iron depletions in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; gradual wavy boundary.

Bt4—23 to 31 inches; yellowish brown (10YR 5/4) silty clay; weak very coarse prismatic structure parting to weak coarse subangular blocky; firm; few fine roots; few distinct brown (10YR 5/3) clay films on faces of peds; few medium distinct yellowish

brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct gray (10YR 5/1) iron depletions in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; common faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of peds; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—31 to 42 inches; yellowish brown (10YR 5/4) silty clay; weak very coarse prismatic structure parting to weak medium platy; firm; few fine roots; few faint brown (10YR 5/3) coatings on vertical faces of prisms; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) iron and manganese stains on vertical faces of prisms and on faces of plates; common faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on vertical faces of prisms and on faces of plates; strongly effervescent; moderately alkaline; gradual wavy boundary.

C—42 to 80 inches; yellowish brown (10YR 5/4) silty clay; massive, widely spaced vertical fractures; platy tendencies; firm; common medium distinct grayish brown (10YR 5/2) iron depletions and yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; common faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of fractures and on faces of plates; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 48 inches
Depth to carbonates: 18 to 40 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—silty clay loam

Bt horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 3 or 4
Texture—silty clay or clay

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture—silty clay, clay, or silty clay loam

Lybrand Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Till
Landform: Dissected areas on end moraines and ground moraines
Position on the landform: Backslopes
Slope: 18 to 50 percent
Adjacent soils: Blount, Glynwood, Morley

Taxonomic classification: Fine, illitic, mesic Typic Hapludalfs

Typical Pedon

Lybrand silt loam, 18 to 50 percent slopes; about 2 miles northwest of Forest, in Delaware Township; about 2,560 feet west and 1,260 feet north of the southeast corner of sec. 36, T. 2 S., R. 11 E.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common fine and medium and few coarse roots; 1 percent rock fragments; strongly acid; abrupt wavy boundary.

BE—4 to 8 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine and medium and few coarse roots; common distinct dark brown (10YR 3/3) organic coatings on faces of peds and in pores; few faint pale brown (10YR 6/3) clay depletions on vertical faces of peds; 1 percent rock fragments; strongly acid; gradual wavy boundary.

Bt1—8 to 13 inches; yellowish brown (10YR 5/4) silty clay loam; weak fine and medium subangular blocky structure; firm; common fine and medium and few coarse roots; few distinct dark brown (10YR 3/3) organic coatings in old root channels and pores; common faint brown (10YR 5/3) clay films on faces of peds; 2 percent rock fragments; moderately acid; gradual wavy boundary.

Bt2—13 to 18 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium subangular blocky structure; firm; common fine and medium and few coarse roots; common faint brown (10YR 4/3) clay films on faces of peds; 2 percent rock fragments; moderately acid; gradual wavy boundary.

Bt3—18 to 24 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium subangular

Figure 11.—Profile of an Arkport soil. The dark yellowish brown lamellae (horizontal bands) in the subsoil are accumulations of clay. Depth is marked in feet.

Figure 12.—Profile of a Fox soil. The dark yellowish brown subsoil tongues into the sandy and gravelly substratum. Depth is marked in feet.

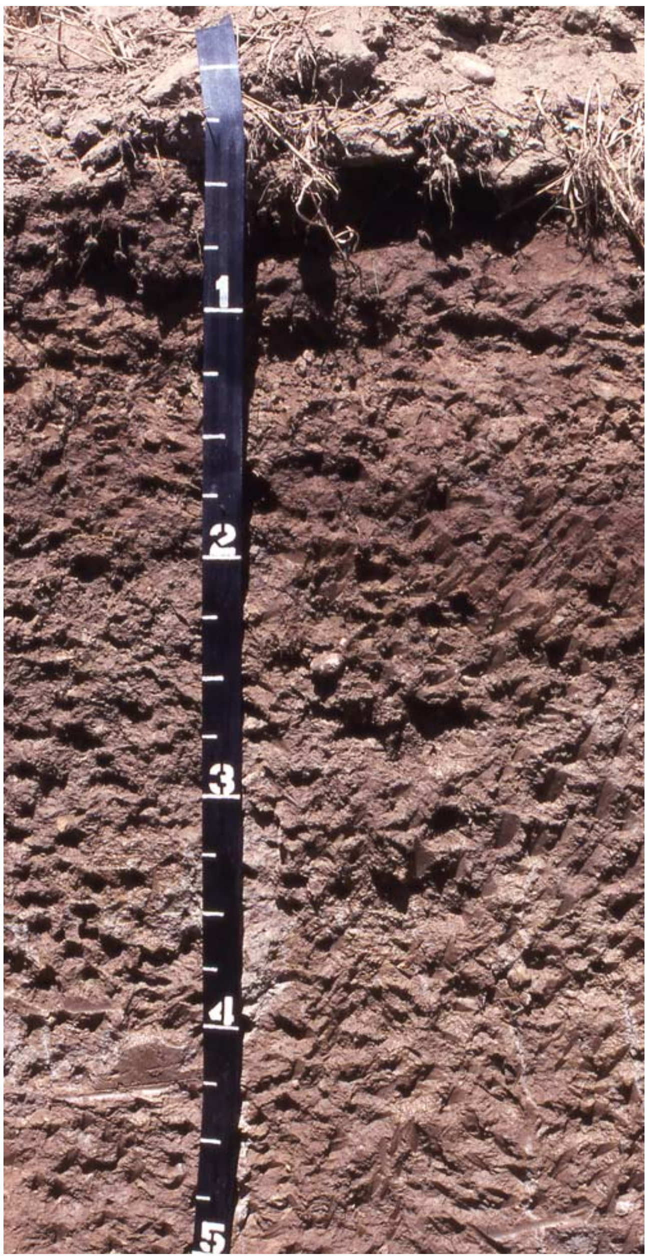

Figure 13.—Profile of a Houcktown soil. The darker loamy layer at about 2 feet marks an irregular boundary between the loamy sediments and the underlying till. Depth is marked in feet.

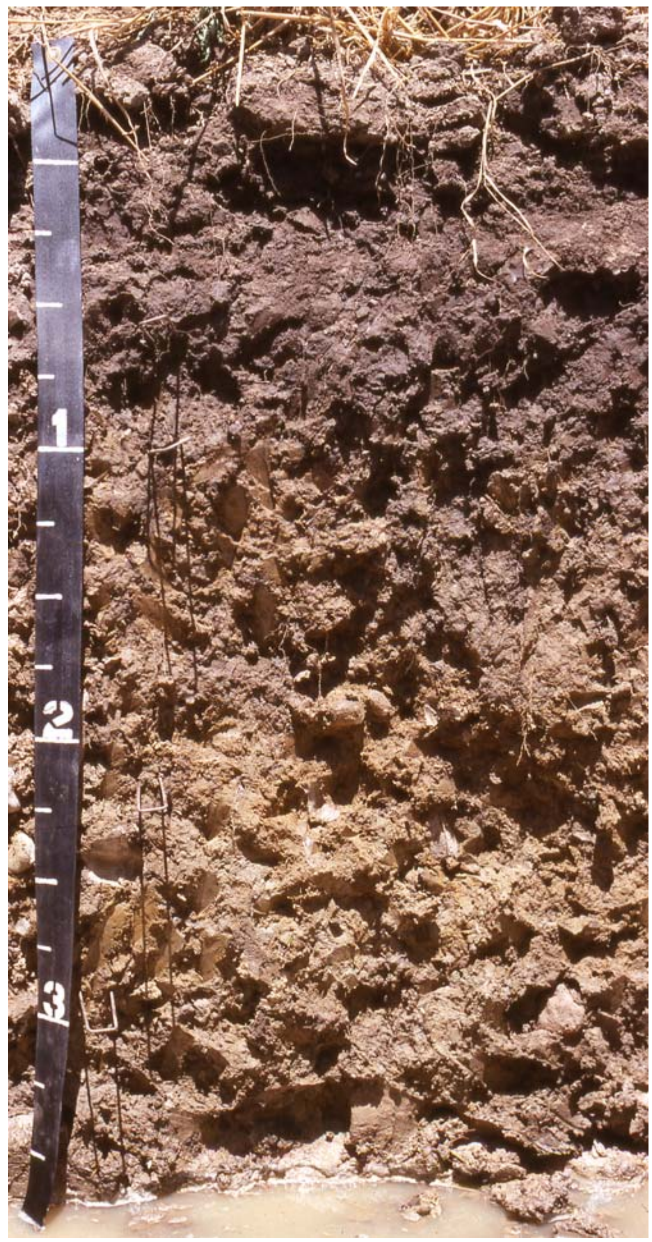

Figure 14.—Profile of a Medway soil. An apparent seasonal high water table is present in the subsoil from the months of December through April. Depth is marked in feet.

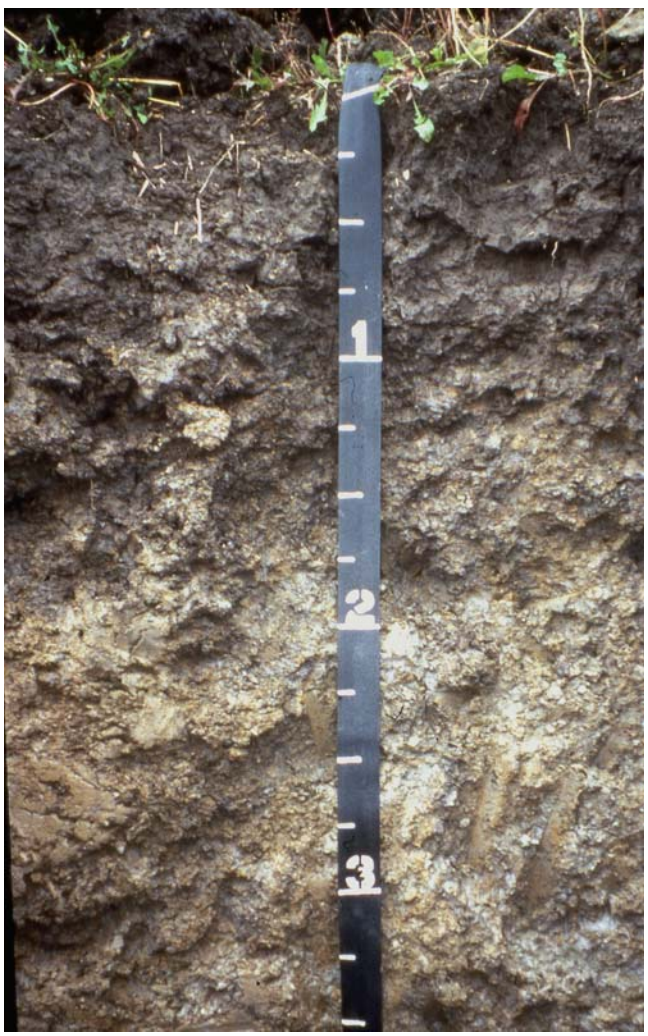

Figure 15.—Profile of a Pewamo soil. Organic matter darkens the color of the surface soil, and the reduction of iron is responsible for the gray colors in the subsoil. Depth is marked in feet.

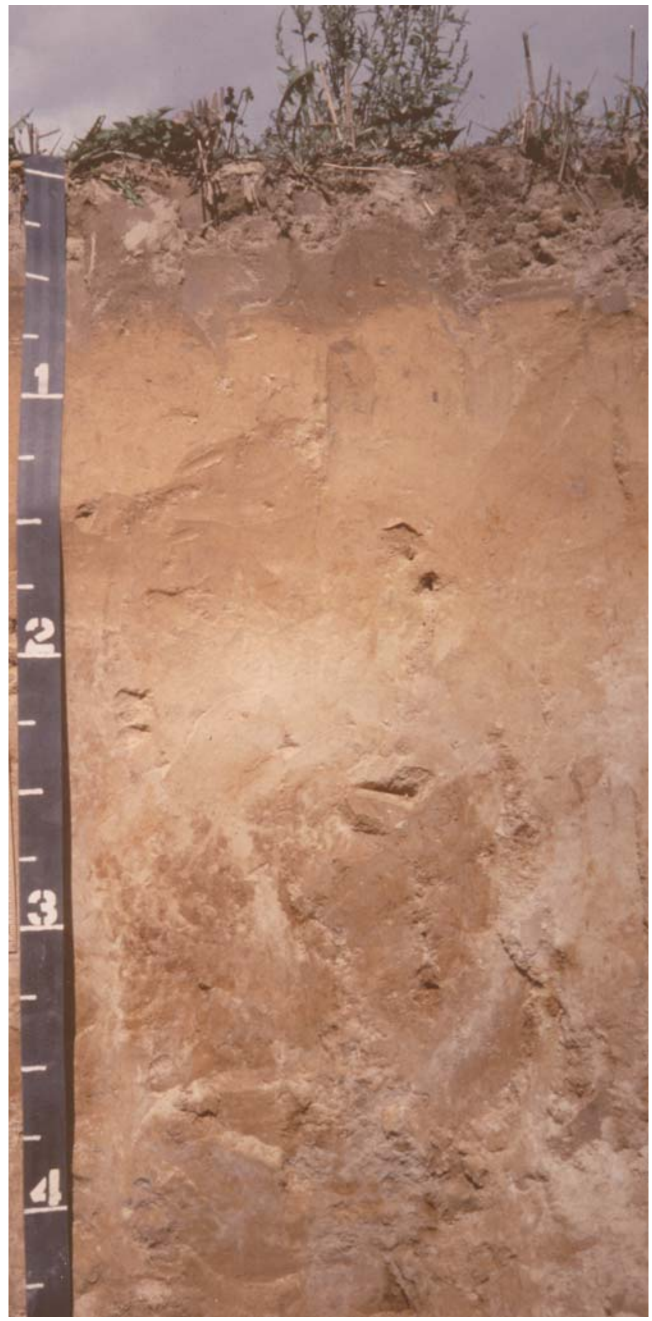

Figure 16.—Profile of a Rimer soil. This somewhat poorly drained soil formed in sandy glaciolacustrine material and in the underlying till. Depth is marked in feet.

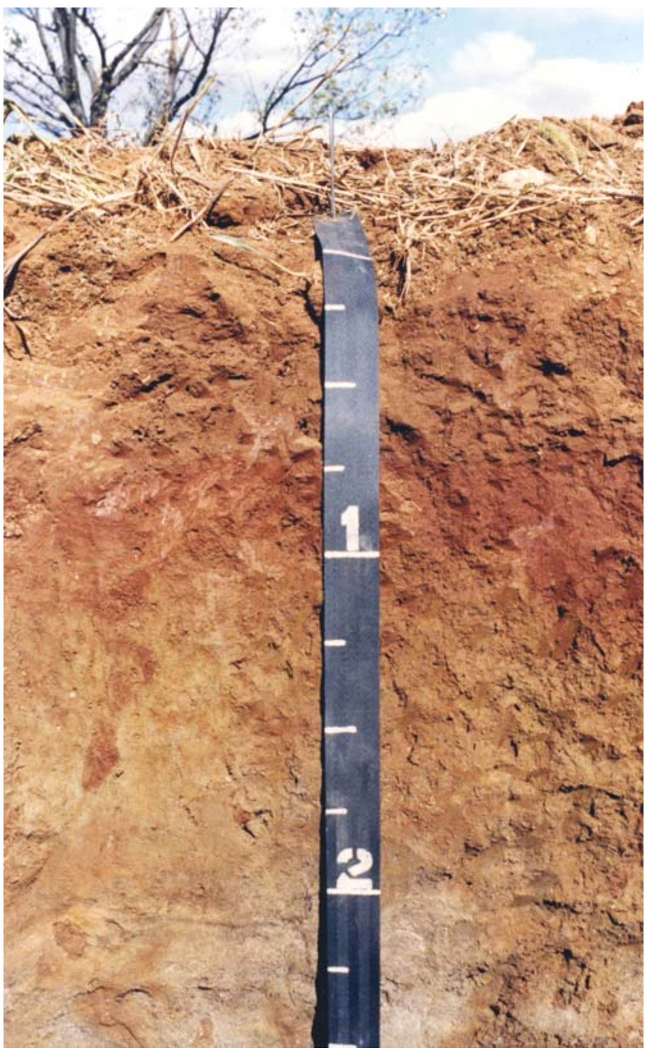

Figure 17.—Profile of a Vaughnsville soil. The brownish and reddish colors in the upper part of the subsoil are the result of iron oxidation. The grayish color in the subsoil below a depth of 2 feet is the result of iron reduction. Depth is marked in feet.

blocky structure; firm; common fine and medium roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

Bt4—24 to 29 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium and coarse subangular blocky structure; firm; common fine and medium roots; common faint brown (10YR 4/3) clay films on faces of peds; few fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; 4 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—29 to 47 inches; yellowish brown (10YR 5/4) clay loam; weak medium platy structure parting to weak medium and coarse subangular blocky; firm; few fine and medium roots in the upper part of the horizon; common faint dark yellowish brown (10YR 4/4) coatings; few fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; 4 percent rock fragments; strongly effervescent; slightly alkaline; gradual irregular boundary.

Cd—47 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, widely spaced vertical fractures; very firm; few distinct grayish brown (10YR 5/2) coatings; few fine and medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; few faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap or A horizon:
Color—hue of 10YR, value of 2 to 4, chroma of 2 or 3
Texture—silt loam
Content of rock fragments—0 to 10 percent

Bt horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 4 to 6
Texture—silty clay loam, silty clay, clay, or clay loam
Content of rock fragments—0 to 10 percent

Cd or Cdg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—silty clay loam or clay loam
Content of rock fragments—2 to 15 percent

Medway Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the solum and moderate or moderately rapid in the substratum
Parent material: Alluvium; alluvium overlying limestone or dolostone in areas of detailed soil map unit McA, which is a limestone substratum phase
Landform: Flats and rises on flood plains
Slope: 0 to 2 percent
Adjacent soils: Knoxdale, Rossburg, Sloan

Taxonomic classification: Fine-loamy, mixed, mesic Fluvaquentic Hapludolls

Typical Pedon

Medway silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded (fig. 14); about 1.25 miles north of Rawson, in Union Township; about 1,520 feet south and 860 feet west of the northeast corner of sec. 11, T. 1 S., R. 9 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, brown (10YR 5/3) dry; weak medium and coarse angular blocky structure parting to weak fine and medium granular; friable; few fine roots; 2 percent rock fragments; neutral; clear smooth boundary.

Bw1—10 to 14 inches; brown (10YR 4/3) silt loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint dark grayish brown (10YR 4/2) coatings on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bw2—14 to 20 inches; brown (10YR 4/3) silt loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint dark grayish brown (10YR 4/2) coatings on faces of peds; common faint dark brown (10YR 3/3) organic coatings on faces of peds; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

Bg1—20 to 31 inches; grayish brown (10YR 5/2) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark grayish brown (10YR 4/2) coatings on faces of peds; common medium and coarse faint dark grayish brown (10YR 4/2) iron depletions in the matrix; common fine and medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few faint very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; few fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg2—31 to 42 inches; grayish brown (10YR 5/2) silt loam with strata of loam; weak medium subangular blocky structure; friable; few fine roots; common faint dark grayish brown (10YR 4/2) coatings on faces of peds; common fine and medium distinct yellowish brown (10YR 5/4) and common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg3—42 to 55 inches; gray (10YR 5/1) loam with strata of sandy loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few faint gray (10YR 5/1) coatings on faces of

peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 7 percent rock fragments; slightly alkaline; gradual wavy boundary.

Cg1—55 to 62 inches; gray (10YR 5/1) very cobbly sandy loam; massive; very friable; common medium and coarse prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) masses that have accumulated iron and are in the matrix; 50 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

Cg2—62 to 72 inches; dark gray (5Y 4/1) loam; massive; friable; 5 percent rock fragments; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2R—72 to 74 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 23 inches
Thickness of the solum: 28 to 60 inches
Depth to carbonates: 35 to more than 80 inches
Depth to bedrock: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit McA

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 to 3
Texture—silt loam
Content of rock fragments—0 to 15 percent

Bw or Bg horizon:
Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 2 to 4; chroma extends to 1 in the lower part of the horizon
Texture—silt loam, silty clay loam, loam, or clay loam
Content of rock fragments—0 to 15 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y ranging to 5Y in areas of detailed soil map unit McA, value of 4 or 5, chroma of 1 to 6
Texture—loam, sandy loam, loamy coarse sand, sand, or the gravelly analogs of those textures; includes very cobbly analogs of those textures in areas of detailed soil map unit McA
Content of rock fragments—0 to 35 percent; 0 to 50 percent in areas of detailed soil map unit McA

Mermill Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Flats, depressions, and drainageways on lake plains
Slope: 0 to 1 percent
Adjacent soils: Aurand, Haskins, Hoytville

Taxonomic classification: Fine-loamy, mixed, mesic Mollic Epiaqualfs

Typical Pedon

Mermill loam, 0 to 1 percent slopes; about 1.75 miles northeast of McComb, in Portage Township; about 1,520 feet north and 2,180 feet east of the southwest corner of sec. 18, T. 2 N., R. 10 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; friable; common fine roots; 1 percent rock fragments; moderately acid; clear wavy boundary.

Btg1—9 to 14 inches; gray (10YR 5/1) clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common medium prominent yellowish brown (10YR 5/6) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg2—14 to 21 inches; grayish brown (2.5Y 5/2) clay loam; weak medium subangular blocky structure; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese

oxide concretions in the matrix; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg3—21 to 28 inches; grayish brown (2.5Y 5/2) sandy clay loam with thin strata of fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent yellowish brown (10YR 5/6) and common medium and coarse faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; clear smooth boundary.

2Btg4—28 to 36 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; many medium and coarse distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few medium faint light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2BC—36 to 57 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots in the upper part of the horizon; common distinct gray (10YR 5/1) coatings on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

2C—57 to 80 inches; brown (10YR 4/3) clay loam; massive, widely spaced vertical fractures; firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the darker surface layer: 7 to 9 inches
Thickness of the solum: 35 to 60 inches
Depth to carbonates: 24 to 50 inches
Depth to till: 20 to 40 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—loam or clay loam
Content of rock fragments—0 to 10 percent

Btg horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; chroma of 1 or 2
Texture—loam, clay loam, or sandy clay loam
Content of rock fragments—0 to 10 percent

2Btg, 2Bt, 2BC, or 2BCg horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; chroma of 1 to 4
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

2C or 2Cg horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; chroma of 1 to 6
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 10 percent

Millsdale Series

Depth class: Moderately deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Till overlying limestone or dolostone
Landform: Flats, depressions, and drainageways on ground moraines and lake plains and on monadnocks on ground moraines
Slope: 0 to 1 percent
Adjacent soils: Milton, Pewamo, Randolph

Taxonomic classification: Fine, mixed, mesic Typic Argiaquolls

Typical Pedon

Millsdale silty clay loam, 0 to 1 percent slopes; about 3.5 miles northeast of Vanlue, in Biglick Township; about 2,500 feet west and 460 feet south of the northeast corner of sec. 36, T. 1 N., R. 12 E.

Ap—0 to 9 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; moderate fine and medium granular structure; firm; common fine and few medium roots; 1 percent rock fragments; neutral; clear smooth boundary.

A—9 to 13 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak medium subangular blocky structure; firm; common fine and few medium roots; few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few fine faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; abrupt smooth boundary.

Btg1—13 to 24 inches; dark gray (10YR 4/1) silty clay; moderate medium subangular blocky structure; firm; common fine and medium roots; common faint dark gray (10YR 4/1) clay films on faces of peds; few faint very dark gray (10YR 3/1) organic coatings lining worm channels and old root channels; common fine faint gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct dark yellowish brown (10YR 4/4) and few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Btg2—24 to 27 inches; gray (10YR 5/1) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine and few medium roots; common faint gray (10YR 5/1) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings lining worm channels and old root channels; common fine and medium distinct dark yellowish brown (10YR 4/4) and few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; clear wavy boundary.

Btg3—27 to 35 inches; gray (10YR 5/1) clay loam; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; common fine and few medium roots; common faint gray (10YR 5/1) clay films on faces of peds; few distinct very dark gray (10YR 3/1) organic coatings lining worm channels; common fine faint light gray (10YR 6/1) iron depletions in the matrix; few medium distinct dark yellowish brown (10YR 4/4) and many medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few very dark gray (10YR 3/1) krotovinas; 3 percent rock fragments; neutral; abrupt wavy boundary.

2R—35 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 23 inches
Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap horizon:
Color—hue of 10YR or 2.5Y; value of 2, 2.5, or 3; chroma of 1 or 2
Texture—silty clay loam
Content of rock fragments—0 to 15 percent

Btg horizon:
Color—hue of 10YR, 2.5Y, or 5Y or is neutral; value of 4 to 6; chroma of 0 to 2
Texture—silty clay, clay, silty clay loam, or clay loam
Content of rock fragments—1 to 15 percent

Milton Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Parent material: Till and the underlying residuum derived from limestone or dolostone
Landform: Flats, rises, and knolls on monadnocks on ground moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 6 percent
Adjacent soils: Biglick, Millsdale, Morley, Randolph

Taxonomic classification: Fine, mixed, mesic Typic Hapludalfs

Typical Pedon

Milton silt loam, 0 to 2 percent slopes; about 2.5 miles north-northeast of Vanlue, in Biglick Township; about 2,200 feet west and 500 feet north of the southeast corner of sec. 26, T. 1 N., R. 12 E.

Ap—0 to 10 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; 1 percent rock fragments; neutral; abrupt smooth boundary.

Bt1—10 to 15 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct brown (10YR 4/3)

organic coatings lining worm channels; common distinct light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; 1 percent rock fragments; neutral; clear wavy boundary.

Bt2—15 to 21 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 2 percent rock fragments; neutral; clear wavy boundary.

2Bt3—21 to 29 inches; brown (7.5YR 4/4) clay; strong medium and fine subangular blocky structure; firm; few fine roots; many distinct dark brown (10YR 3/3) clay films on faces of peds; 5 percent highly weathered or partially weathered limestone flagstones; neutral; abrupt irregular boundary.

2R—29 to 31 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 3 to 6
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—1 to 12 percent

2Bt horizon:
Color—hue of 10YR, 7.5YR, or 5YR; value of 4 or 5; chroma of 2 to 6
Texture—clay or silty clay
Content of rock fragments—2 to 25 percent

Morley Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow or slow in the solum and slow or very slow in the till substratum
Parent material: Till; till overlying limestone or dolostone in areas of detailed soil map units MrA and MsB, which are limestone substratum phases
Landform: Dissected areas on end moraines and ground moraines; on knolls and rises on monadnocks on ground moraines in areas of detailed soil map units MrA and MsB
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 18 percent
Adjacent soils: Blount, Glynwood, Millsdale, Milton, Lybrand, Pewamo

Taxonomic classification: Fine, illitic, mesic Oxyaquic Hapludalfs

Typical Pedon

Morley loam, limestone substratum, 0 to 2 percent slopes; about 3 miles northeast of Vanlue, in Biglick Township; about 820 feet north and 1,740 feet west of the southeast corner of sec. 36, T. 1 N., R. 12 E.

Ap—0 to 8 inches; dark brown (10YR 3/3) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine and few medium roots; 1 percent rock fragments; neutral; abrupt smooth boundary.

Bt1—8 to 12 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; common faint brown (10YR 5/3) clay films on faces of peds; few distinct brown (10YR 4/3) organic coatings on vertical faces of peds; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; neutral; gradual wavy boundary.

Bt2—12 to 17 inches; yellowish brown (10YR 5/4) clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common faint brown (10YR 4/3) and brown (10YR 5/3) clay films on faces of peds; few medium faint brown (10YR 5/3) and few fine faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; 3 percent rock fragments; slightly acid; clear wavy boundary.

Bt3—17 to 24 inches; dark yellowish brown (10YR 4/4) clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common faint brown (10YR 5/3) clay films on faces of peds; few medium distinct yellowish brown (10YR 5/6) and few medium faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds;

3 percent rock fragments; neutral; clear wavy boundary.

Bt4—24 to 34 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; few medium faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; common faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on faces of peds; 5 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

BC—34 to 45 inches; dark yellowish brown (10YR 4/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots in the upper part of the horizon; few distinct grayish brown (10YR 5/2) and brown (10YR 5/3) clay films on vertical faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on vertical faces of peds; few distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of peds; 5 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

Cd—45 to 66 inches; dark yellowish brown (10YR 4/4) clay loam; massive, widely spaced vertical fractures; very firm; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium faint yellowish brown (10YR 5/4) masses that have accumulated iron and are along fractures; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of fractures; few distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2R—66 to 68 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the solum: 30 to 48 inches
Depth to carbonates: 20 to 45 inches
Depth to dense material: 20 to 40 inches in areas of detailed soil map unit MpD3; 40 to 60 inches in areas of detailed soil map units MrA and MsB
Depth to bedrock: More than 80 inches; 60 to 80 inches in areas of detailed soil map units MrA and MsB

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam or clay loam
Content of rock fragments—0 to 10 percent

Bt horizon:
Color—hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 to 6
Texture—clay, silty clay, clay loam, or silty clay loam
Content of rock fragments—1 to 15 percent

Cd horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—clay loam, silty clay loam, or loam
Content of rock fragments—1 to 15 percent

Mortimer Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Till
Landform: Knolls and dissected areas on end moraines
Position on the landform: Backslopes, shoulders
Slope: 2 to 6 percent
Adjacent soils: Hoytville, Nappanee, St. Clair

Taxonomic classification: Fine, illitic, mesic Aquic Hapludalfs

Typical Pedon

Mortimer silt loam, 2 to 6 percent slopes; about 3 miles south of McComb, in Blanchard Township; about 2,460 feet west and 1,165 feet south of the northeast corner of sec. 12, T. 1 N., R. 9 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; common faint very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly acid; clear smooth boundary.

Bt1—8 to 13 inches; yellowish brown (10YR 5/4) silty clay; moderate fine and medium subangular blocky structure; firm; common fine roots; common faint brown (10YR 5/3) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct light brownish gray (10YR 6/2) clay depletions on vertical faces of peds and in pores; common fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—13 to 18 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common distinct brown (10YR 4/3) and few distinct grayish brown (10YR 5/2) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; moderately acid; gradual wavy boundary.

Bt3—18 to 22 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common distinct brown (10YR 4/3) and few distinct grayish brown (10YR 5/2) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; 1 percent rock fragments; neutral; clear wavy boundary.

Bt4—22 to 28 inches; dark yellowish brown (10YR 4/4) silty clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of peds; 1 percent rock fragments; strongly effervescent; slightly alkaline; clear smooth boundary.

Bt5—28 to 39 inches; dark yellowish brown (10YR 4/4) silty clay; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of peds; 1 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—39 to 49 inches; dark yellowish brown (10YR 4/4) silty clay; weak medium and coarse subangular blocky structure; firm; common distinct grayish brown (10YR 5/2) coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of peds; 2 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

Cd—49 to 80 inches; dark yellowish brown (10YR 4/4) silty clay; massive, widely spaced vertical fractures; very firm; few distinct grayish brown (10YR 5/2) coatings on faces of fractures; few medium distinct grayish brown (10YR 5/2) iron depletions along fractures; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are along fractures; common fine distinct very dark grayish brown (10YR 3/2) iron and manganese oxide concretions in the matrix; few distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are along fractures; 2 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 55 inches
Depth to carbonates: 17 to 35 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3

Texture—silt loam or silty clay loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 6
Texture—silty clay or clay; silty clay loam in the upper part of the Bt horizon in some pedons
Content of rock fragments—0 to 5 percent

Cd or Cdg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 6
Texture—silty clay or clay
Content of rock fragments—1 to 7 percent

Nappanee Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Till
Landform: Flats, rises, and dissected areas on lake plains
Position on the landform: Summits, shoulders, backslopes
Slope: 0 to 6 percent
Adjacent soils: Haskins, Hoytville, Mortimer, St. Clair

Taxonomic classification: Fine, illitic, mesic Aeric Epiaqualfs

Typical Pedon

Nappanee silty clay loam, 0 to 2 percent slopes; about 2 miles northwest of Deweyville, in Pleasant Township; about 240 feet north and 1,460 feet west of the southeast corner of sec. 6, T. 2 N., R. 9 E.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silty clay loam, pale brown (10YR 6/3) dry; weak medium and coarse subangular blocky structure parting to moderate medium granular; firm; few medium and common fine roots; few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are lining the interior of pores; 10 percent intermixed areas of brown (10YR 5/3) Bt material; 1 percent rock fragments; strongly acid; clear smooth boundary.

Bt—8 to 15 inches; brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 1 percent rock fragments; strongly acid; gradual wavy boundary.

Btg1—15 to 24 inches; grayish brown (10YR 5/2) silty clay; strong fine and medium subangular blocky structure; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg2—24 to 32 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to moderate fine and medium subangular blocky; firm; few fine roots; many faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 2 percent rock fragments; slightly effervescent, discontinuously in the matrix; slightly alkaline; gradual wavy boundary.

B't—32 to 40 inches; yellowish brown (10YR 5/4) clay; weak medium prismatic structure parting to moderate medium subangular blocky; very firm; few fine and very fine roots in the upper part of the horizon; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 2 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

BC—40 to 56 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; very firm; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly

effervescent; moderately alkaline; gradual wavy boundary.

Cd—56 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, widely spaced vertical fractures; very firm; few fine and medium distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; few distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are oriented along faces of fractures; few medium distinct white (10YR 8/1) calcium carbonate concretions in the matrix; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 18 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 1 to 3
Texture—silty clay loam or loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—silty clay or clay; thin subhorizons of silty clay loam in some pedons
Content of rock fragments—1 to 10 percent

BC or BCg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—2 to 10 percent

Cd or Cdg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—2 to 10 percent

Oshtemo Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid in the solum and very rapid in the substratum; slow or very slow in the till part in areas of detailed soil map unit OsB, which is a till substratum phase
Parent material: Stratified loamy, sandy, and gravelly deposits; stratified loamy, sandy, and gravelly deposits overlying till in areas of detailed soil map unit OsB
Landform: Knolls and rises on outwash plains and on beach ridges on lake plains
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 12 percent
Adjacent soils: On beach ridges—Aurand, Fox, Shawtown; on outwash plains—Alvada, Lamberjack, Thackery, Westland

Taxonomic classification: Coarse-loamy, mixed, mesic Typic Hapludalfs

Typical Pedon

Oshtemo fine sandy loam, 2 to 6 percent slopes; about 3.75 miles west-southwest of McComb, in Pleasant Township; about 1,940 feet west and 2,460 feet north of the southeast corner of sec. 31, T. 2 N., R. 9 E.

Ap—0 to 10 inches; brown (10YR 4/3) fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; very friable; common fine roots; 5 percent rock fragments; strongly acid; clear smooth boundary.

Bt1—10 to 18 inches; dark yellowish brown (10YR 4/4) fine sandy loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak fine and medium subangular blocky structure; very friable; common fine roots; common faint brown (10YR 4/3) clay films on faces of peds and as bridging between sand grains; 5 percent rock fragments; strongly acid; gradual wavy boundary.

Bt2—18 to 27 inches; dark yellowish brown (10YR 4/4) fine sandy loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; very friable; few fine roots; common distinct brown (7.5YR 4/4) clay films on faces of peds and as bridging between sand grains; 7 percent rock fragments; moderately acid; gradual wavy boundary.

Bt3—27 to 34 inches; brown (7.5YR 4/4) coarse sandy loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint brown (7.5YR 4/4) clay films on faces of peds and as bridging between sand grains; 10 percent rock fragments; slightly acid; clear wavy boundary.

Bt4—34 to 43 inches; dark yellowish brown (10YR 3/4) gravelly sandy loam with thin strata of sandy loam; weak fine and medium subangular blocky structure; very friable; few bodies of sandy clay loam; few fine roots; common faint dark yellowish brown (10YR 3/4) clay as bridging between sand grains; tonguing of Bt4 material extends to depths of more than 80 inches; 17 percent rock fragments; neutral; abrupt irregular boundary.

C1—43 to 54 inches; yellowish brown (10YR 5/4) coarse sand; single grain; loose; 10 percent rock fragments; strongly effervescent; moderately alkaline; clear smooth boundary.

C2—54 to 80 inches; brown (10YR 5/3) gravelly coarse sand with strata of coarse sand; single grain; loose; 20 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 75 inches; 35 to 45 inches in areas of detailed soil map unit OsB on the Whittlesey beach ridge
Depth to carbonates: 40 to 70 inches
Depth to till: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit OsB
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 2 or 3
Texture—fine sandy loam or sandy loam
Content of rock fragments—1 to 15 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 3 to 6
Texture—fine sandy loam, sandy loam, coarse sandy loam, sandy clay loam, loam, gravelly coarse sandy loam, gravelly sandy loam, or gravelly sandy clay loam
Content of rock fragments—1 to 30 percent

C horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 2 to 6
Texture—coarse sand, loamy coarse sand, sand, loamy sand, or the gravelly analogs of those textures; commonly stratified
Content of rock fragments—5 to 30 percent

2Cd or 2Cdg horizon (if it occurs):
Color—hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture—silty clay loam, clay loam, or clay
Content of rock fragments—1 to 7 percent

Ottokee Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Rapid
Parent material: Sandy deposits
Landform: Knolls and rises on outwash plains
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 6 percent
Adjacent soils: Adrian, Gilford

Taxonomic classification: Mixed, mesic Aquic Udipsamments

Typical Pedon

Ottokee loamy fine sand, 0 to 6 percent slopes; about 4 miles northeast of Vanlue, in Biglick Township; about 2,160 feet south and 740 feet west of the northeast corner of sec. 25, T. 1 N., R. 12 E.

Ap—0 to 11 inches; brown (10YR 4/3) loamy fine sand, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; few fine and medium roots; slightly acid; abrupt smooth boundary.

E1—11 to 21 inches; yellowish brown (10YR 5/6) loamy fine sand; single grain; loose; few fine roots; common medium distinct pale brown (10YR 6/3) and faint strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; slightly acid; gradual wavy boundary.

E2—21 to 36 inches; yellowish brown (10YR 5/6) loamy fine sand; single grain; loose; few fine roots; common medium prominent light brownish gray (10YR 6/2) iron depletions in the matrix; common medium faint strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine prominent black (10YR 2/1) manganese oxide concretions in the matrix; moderately acid; gradual wavy boundary.

E and Bt—36 to 65 inches; pale brown (10YR 6/3) loamy fine sand; single grain; loose (E part); yellowish brown (10YR 5/4) loamy fine sand; weak fine subangular blocky structure; very friable (Bt part); few fine roots; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; common fine prominent black (10YR 2/1) masses in which manganese oxide has accumulated and are in the matrix; slightly acid; gradual wavy boundary.

C1—65 to 72 inches; brown (10YR 5/3) loamy fine sand with strata of loamy sand; single grain;

loose; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

C2—72 to 80 inches; brown (10YR 5/3) loamy fine sand; single grain; loose; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; strongly effervescent; slightly alkaline.

Range in Characteristics

Depth to uppermost lamellae: 28 to 50 inches
Thickness of the solum: 40 to 90 inches
Depth to carbonates: 40 to 90 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loamy fine sand
Content of rock fragments—0 to 5 percent

E horizon:
Color—hue of 10YR or 7.5YR, value of 5 or 6, chroma of 4 to 8
Texture—loamy fine sand, fine sand, sand, or loamy sand
Content of rock fragments—0 to 5 percent

E and Bt horizon:
Color—10YR or 2.5Y, value of 4 to 6, chroma of 1 to 3 in E part; hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 4 to 8 in Bt part
Texture—loamy fine sand, loamy sand, sand, or fine sand in E part; loamy fine sand or loamy sand in Bt part
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y or is neutral; value of 5 or 6; chroma of 0 to 3
Texture—fine sand, loamy fine sand, loamy sand, or sand
Content of rock fragments—0 to 5 percent

Patton Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the solum and moderately slow in the substratum
Parent material: Glaciolacustrine deposits
Landform: Flats and depressions on lake plains
Slope: 0 to 1 percent
Adjacent soils: Darroch, Del Rey, Shinrock

Taxonomic classification: Fine-silty, mixed, mesic Typic Endoaquolls

Typical Pedon

Patton silty clay loam, 0 to 1 percent slopes; about 4.5 miles west of Benton Ridge, in Blanchard Township; about 590 feet east and 2,580 feet south of the northwest corner of section 30, T. 1 N., R. 9 E.

Ap—0 to 12 inches; very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; firm; common fine and few medium roots; neutral; clear smooth boundary.

Bg1—12 to 20 inches; gray (10YR 5/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; common distinct very dark gray (10YR 3/1) organic coatings on vertical faces of peds and in pores; common medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bg2—20 to 30 inches; gray (10YR 5/1) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; common distinct very dark gray (10YR 3/1) organic coatings on vertical faces of peds and in pores; common medium prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bg3—30 to 35 inches; gray (10YR 5/1) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common distinct very dark gray (10YR 3/1) organic coatings in pores; few faint dark gray (10YR 4/1) coatings on vertical faces of peds; many medium and coarse prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; slightly alkaline; clear wavy boundary.

Bg4—35 to 48 inches; gray (10YR 5/1) silty clay loam with strata of silt loam; weak medium prismatic structure parting to weak medium subangular

blocky; firm; few fine roots; common distinct very dark gray (10YR 3/1) organic coatings in pores; few faint gray (10YR 5/1) coatings on vertical faces of peds; many medium distinct dark yellowish brown (10YR 4/4) and common medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; slightly alkaline; gradual wavy boundary.

BCg—48 to 59 inches; gray (10YR 5/1) silt loam with strata of silty clay loam and loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few faint gray (10YR 5/1) coatings on vertical faces of peds; many medium distinct yellowish brown (10YR 5/4) and common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; slightly alkaline; clear wavy boundary.

C—59 to 80 inches; yellowish brown (10YR 5/4) silt loam with strata of loamy fine sand and loamy sand; massive; friable; common medium and coarse distinct dark gray (10YR 4/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 5 percent rock fragments in the loamy sand strata; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 18 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—silty clay loam
Content of rock fragments—0 to 5 percent

Bg horizon:
Color—hue of 10YR, 2.5Y, or 5Y or is neutral; value of 4 or 5; chroma of 0 to 2
Texture—silty clay loam
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture—silt loam or silty clay loam; commonly stratified
Content of rock fragments—0 to 5 percent

Pewamo Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderately slow
Parent material: Till
Landform: Flats, depressions, and drainageways on end moraines, ground moraines, disintegration moraines, and lake plains
Slope: 0 to 2 percent
Adjacent soils: Blount, Elliott, Glynwood

Taxonomic classification: Fine, mixed, mesic Typic Argiaquolls

Typical Pedon

Pewamo silty clay loam, 0 to 1 percent slopes (fig. 15); about 3 miles south of Findlay, in Eagle Township; about 920 feet south and 800 feet east of the northwest corner of sec. 2, T. 1 S., R. 10 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak medium angular blocky structure parting to moderate medium and fine granular; firm; common fine and few medium roots; common faint very dark grayish brown (10YR 3/2) wormcasts in pores; few faint very dark gray (10YR 3/1) organic coatings on faces of peds; 5 percent intermixed areas of dark gray (10YR 4/1) Btg1 material; 1 percent rock fragments; slightly acid; abrupt smooth boundary.

Btg1—11 to 18 inches; dark gray (10YR 4/1) silty clay; moderate medium and fine subangular blocky structure; firm; common fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds and lining old worm and root channels; common medium faint gray (10YR 5/1) iron depletions in the matrix; common fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; few very dark grayish brown (10YR 3/2) krotovinas; 1 percent rock fragments; neutral; clear wavy boundary.

Btg2—18 to 24 inches; gray (10YR 5/1) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings in old root and worm channels;

common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; few very dark grayish brown (10YR 3/2) krotovinas; 1 percent rock fragments; neutral; gradual wavy boundary.

Btg3—24 to 31 inches; gray (10YR 5/1) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common faint gray (10YR 5/1) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings lining old root and worm channels; common medium faint grayish brown (10YR 5/2) masses that have accumulated iron and are in the matrix; few medium prominent strong brown (7.5YR 5/6) and common medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; few very dark grayish brown (10YR 3/2) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Btg4—31 to 45 inches; gray (10YR 5/1) silty clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few faint gray (10YR 5/1) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) organic coatings in old root channels; common coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; few very dark grayish brown (10YR 3/2) krotovinas; 2 percent rock fragments; slightly alkaline; clear wavy boundary.

Bt—45 to 53 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; few distinct gray (10YR 5/1) clay films on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; few very dark grayish brown (10YR 3/2) krotovinas; 4 percent rock fragments; slightly alkaline; gradual wavy boundary.

BC—53 to 66 inches; dark yellowish brown (10YR 4/4) clay loam; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; strongly effervescent at a depth of 58 inches; moderately alkaline; gradual wavy boundary.

C1—66 to 74 inches; brown (10YR 4/3) clay loam; massive, widely spaced vertical fractures; firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common medium distinct gray (10YR 5/1) iron depletions oriented along fractures; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline; gradual wavy boundary.

C2—74 to 80 inches; brown (10YR 4/3) clay loam; massive, widely spaced vertical fractures; firm; common medium faint grayish brown (2.5Y 5/2) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 17 inches
Thickness of the solum: 28 to 70 inches
Depth to carbonates: 28 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—silty clay loam
Content of rock fragments—0 to 10 percent

Btg or Bt horizon:
Color—hue of 10YR, 2.5Y, or 5Y; value of 4 to 6; chroma of 1 to 4
Texture—silty clay, clay, silty clay loam, or clay loam
Content of rock fragments—1 to 10 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4

Texture—clay loam or silty clay loam
Content of rock fragments—1 to 15 percent

Randolph Series

Depth class: Moderately deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Parent material: Till overlying limestone or dolostone
Landform: Rises on ground moraines and on monadnocks on ground moraines
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent
Adjacent soils: Millsdale, Milton

Taxonomic classification: Fine, mixed, mesic Aeric Endoaqualfs

Typical Pedon

Randolph silt loam, 0 to 2 percent slopes; about 1 mile south of Findlay, in Liberty Township; about 140 feet west and 1,300 feet north of the southeast corner of sec. 26, T. 1 N., R. 10 E.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very pale brown (10YR 7/3) dry; moderate fine and medium granular structure; friable; common fine and few medium roots; 10 percent intermixed areas of dark yellowish brown (10YR 4/4) Bt1 material; 1 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1—11 to 15 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium and fine subangular blocky structure; firm; common fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; few distinct dark grayish brown (10YR 4/2) organic coatings lining old root channels; many medium distinct gray (10YR 5/1) iron depletions in the matrix; common medium and coarse distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 2 percent rock fragments; strongly acid; clear wavy boundary.

Bt2—15 to 18 inches; dark yellowish brown (10YR 4/4) silty clay; moderate medium and fine subangular blocky structure; firm; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; strongly acid; gradual wavy boundary.

Btg—18 to 25 inches; dark grayish brown (10YR 4/2) clay loam; moderate medium subangular blocky structure; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common fine faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; abrupt wavy boundary.

2R—25 to 27 inches; light gray (10YR 7/2) limestone bedrock.

Range in Characteristics

Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

Ap horizon
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 3
Texture—silt loam
Content of rock fragments—0 to 3 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—silty clay loam, silty clay, clay loam, or clay
Content of rock fragments—0 to 3 percent in the upper part of the horizon and 2 to 15 percent in the lower part

Rawson Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum and slow or very slow in the lower part of the solum and in the substratum
Parent material: Loamy deposits and the underlying till
Landform: Knolls on lake plains
Position on the landform: Backslopes, shoulders
Slope: 2 to 6 percent
Adjacent soils: Rimer, Oshtemo

Taxonomic classification: Fine-loamy, mixed, mesic Oxyaquic Hapludalfs

Typical Pedon

Rawson sandy loam; from an area of Rawson sandy loam, 2 to 6 percent slopes, in York Township, Fulton

County, Ohio; about 1.5 miles east of Wauseon and about 320 feet south and 2,300 east of the northwest corner of sec. 30, T. 7 N., R. 7 E.

Ap—0 to 10 inches; brown (10YR 4/3) sandy loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; few fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1—10 to 19 inches; yellowish brown (10YR 5/4) sandy loam; common medium distinct brown (10YR 4/3) mottles; weak medium subangular blocky structure; friable; few fine roots; thin very patchy brown (10YR 4/3) clay films on faces of peds and as clay bridging between sand grains; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Bt2—19 to 28 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine subangular blocky structure; firm; few fine roots; many faint dark brown (10YR 4/3) clay films on faces of peds; 10 percent rock fragments; neutral; gradual wavy boundary.

Bt3—28 to 32 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common faint very dark grayish brown (10YR 3/2) iron and manganese oxide stains on faces of peds; 10 percent rock fragments; neutral; abrupt smooth boundary.

2Bt4—32 to 36 inches; dark brown (10YR 4/3) clay loam; weak medium subangular blocky structure; firm; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; neutral; abrupt wavy boundary.

2C—36 to 60 inches; brown (10YR 5/3) clay loam; massive, widely spaced vertical fractures; very firm; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) calcium carbonate coatings on faces of fractures; 3 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 24 to 48 inches
Depth to carbonates: 24 to 48 inches
Depth to till: 20 to 40 inches
Depth to dense material: 24 to 48 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—sandy loam
Content of rock fragments—0 to 15 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 to 6
Texture—clay loam, sandy clay loam, sandy loam, loam, or the gravelly analogs of those textures
Content of rock fragments—2 to 25 percent

2Bt or 2Btg horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 1 to 6
Texture—clay loam, silty clay loam, or clay
Content of rock fragments—1 to 10 percent

2C or 2Cg horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 1 to 6
Texture—clay loam, silty clay loam, or clay
Content of rock fragments—1 to 10 percent

Rensselaer Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate; moderate in the solum and slow or moderately slow in the substratum in areas of detailed soil map unit RhA, which is a till substratum phase
Parent material: Loamy deposits; loamy deposits overlying till in areas of detailed soil map unit RhA
Landform: Flats, depressions, and drainageways on lake plains, outwash plains, ground moraines, and glacial drainage channels
Slope: 0 to 1 percent
Adjacent soils: Jenera, Pewamo, Tiderishi, Vanlue, Westland

Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiaquolls

Typical Pedon

Rensselaer loam, till substratum, 0 to 1 percent slopes; about 3.5 miles west-southwest of Benton Ridge, in Union Township; about 2,440 feet east and 2,200 feet south of the northwest corner of sec. 5, T. 1 S., R. 9 E.

Ap—0 to 12 inches; very dark gray (10YR 3/1) loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; friable; few medium and common fine roots; few faint dark brown (7.5YR 3/2) moderately cemented iron and manganese concretions in the matrix; slightly acid; clear smooth boundary.

Btg1—12 to 16 inches; dark gray (10YR 4/1) loam; moderate fine and medium subangular blocky structure; friable; few medium and common fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) and brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; common fine and medium faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few very dark gray (10YR 3/1) krotovinas; neutral; gradual wavy boundary.

Btg2—16 to 23 inches; gray (10YR 5/1) loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common faint gray (10YR 5/1) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine and medium distinct dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few very dark gray (10YR 3/1) krotovinas; neutral; clear wavy boundary.

Btg3—23 to 35 inches; grayish brown (10YR 5/2) clay loam with strata of loam and silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium and coarse distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; common fine and medium faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few very dark gray (10YR 3/1) krotovinas; neutral; gradual wavy boundary.

Bt—35 to 46 inches; yellowish brown (10YR 5/4) clay loam with strata of loam and silty clay loam; moderate medium and coarse subangular blocky structure; friable; few fine roots; common faint gray (10YR 5/1) clay films on faces of peds; common fine and medium distinct gray (10YR 5/1) and many medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium and coarse distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; few very dark gray (10YR 3/1) krotovinas; neutral; clear wavy boundary.

BC—46 to 54 inches; yellowish brown (10YR 5/4) loam with strata of fine sandy loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) and many medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; few fine and medium distinct strong brown (7.5YR 5/6) and common medium and coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few very dark gray (10YR 3/1) krotovinas; slightly alkaline; clear wavy boundary.

Cg1—54 to 63 inches; dark grayish brown (10YR 4/2) loamy sand with strata of silt loam, silty clay loam, and fine sandy loam; single grain; loose; common medium and coarse distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; abrupt smooth boundary.

2Cg2—63 to 80 inches; dark gray (10YR 4/1) clay loam; massive; firm; few fine and medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 12 to 18 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Depth to till: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit RhA
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 1 or 2
Texture—loam
Content of rock fragments—0 to 5 percent

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2
Texture—loam, clay loam, silty clay loam, sandy clay loam, or fine sandy loam
Content of rock fragments—0 to 5 percent

Bt horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—loam, clay loam, sandy clay loam, or fine sandy loam
Content of rock fragments—0 to 5 percent

Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 or 2
Texture—loamy sand, loamy fine sand, sandy loam, fine sandy loam, loam, silt loam, or sand; commonly stratified
Content of rock fragments—0 to 10 percent

2C or 2Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—clay loam or silty clay loam
Content of rock fragments—1 to 7 percent

Rimer Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Rapid in the upper part of the solum, slow in the lower part of the solum, and slow or very slow in the substratum; rapid in the upper part of the solum, moderately rapid in the lower part of the solum, rapid in the upper part of the substratum, and slow or moderately slow in the lower part of the substratum in areas of detailed soil map unit RoA, which is a deep phase
Parent material: Sandy deposits and the underlying till
Landform: Rises on lake plains
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent
Adjacent soils: Haskins, Mermill, Oshtemo; Arkport, Rensselaer, Tiderishi in detailed soil map unit RoA

Taxonomic classification: Loamy, mixed, mesic Aquic Arenic Hapludalfs

Typical Pedon

Rimer loamy sand, 0 to 2 percent slopes (fig. 16); about 4.5 miles west of Van Buren, in Portage Township; about 1,780 feet north and 1,380 feet west of the southeast corner of sec. 5, T. 2 N., R. 10 E.

Ap—0 to 10 inches; dark brown (10YR 3/3) loamy sand, light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; very friable; common fine roots; 5 percent intermixed areas of yellowish brown (10YR 5/4) E1 material; moderately acid; abrupt smooth boundary.

E1—10 to 17 inches; yellowish brown (10YR 5/4) loamy sand; weak fine and medium subangular blocky structure; very friable; common fine roots; common medium and coarse faint brown (10YR 5/3) iron depletions in the matrix; common medium and coarse faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; moderately acid; clear wavy boundary.

E2—17 to 23 inches; brown (10YR 5/3) loamy sand; weak fine and medium subangular blocky structure; very friable; few fine roots; common fine and medium prominent strong brown (7.5YR 5/6) and few medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; clear wavy boundary.

Bt—23 to 28 inches; dark yellowish brown (10YR 4/4) sandy loam with thin strata of loamy sand and sandy clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; abrupt wavy boundary.

2Btg—28 to 35 inches; grayish brown (10YR 5/2) silty clay; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; few fine roots; common faint dark grayish brown (10YR 4/2) clay films on faces of peds; common fine and medium faint gray (10YR 5/1) iron depletions in the matrix; common fine and

medium prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; few faint very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; common fine and medium faint very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

2Bt—35 to 40 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; common distinct gray (10YR 6/1) clay films on faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; few medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2BC—40 to 54 inches; dark yellowish brown (10YR 4/4) clay; weak medium and coarse subangular blocky structure; very firm; common distinct gray (10YR 6/1) coatings on vertical faces of peds; common fine and medium distinct gray (10YR 5/1) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few faint pale brown (10YR 6/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; few fine and medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

2Cd—54 to 80 inches; dark yellowish brown (10YR 4/4) clay; massive, widely spaced vertical fractures; very firm; few distinct gray (10YR 6/1) coatings on faces of fractures; common fine and medium distinct gray (10YR 5/1) iron depletions oriented along fractures; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; few fine and medium faint pale brown (10YR 6/3) moderately cemented calcium carbonate concretions in the matrix; 5 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the sandy material: 20 to 32 inches
Thickness of the solum: 25 to 55 inches
Depth to carbonates: 25 to 45 inches; ranges to 55 inches in areas of detailed soil map unit RoA
Depth to till: 25 to 40 inches; 40 to 60 inches in areas of detailed soil map unit RoA
Depth to dense material: 40 to 60 inches; more than 80 inches in areas of detailed soil map unit RoA
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 to 5, chroma of 1 to 3
Texture—loamy sand or loamy fine sand
Content of rock fragments—0 to 3 percent

E or Eg horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 2 to 4
Texture—loamy sand or loamy fine sand
Content of rock fragments—0 to 3 percent

Bt or Btg horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 2 to 6
Texture—sandy loam or fine sandy loam
Content of rock fragments—0 to 3 percent

2Bt or 2Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—silty clay, clay, clay loam, or silty clay loam
Content of rock fragments—1 to 8 percent

2Cd or 2Cdg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—silty clay, clay, clay loam, or silty clay loam
Content of rock fragments—1 to 8 percent

3C or 3Cg horizon: (in areas of detailed soil map unit RoA)
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—loamy sand, sandy loam
Content of rock fragments—1 to 8 percent

4C or 4Cg horizon: (in areas of detailed soil map unit RoA)
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4

Texture—loam, clay loam, or silty clay loam
Content of rock fragments—1 to 8 percent

Rossburg Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the solum and moderately rapid in the substratum
Parent material: Alluvium
Landform: Natural levees, flats, and rises on flood plains
Slope: 0 to 2 percent
Adjacent soils: Medway, Sloan

Taxonomic classification: Fine-loamy, mixed, mesic Fluventic Hapludolls

Typical Pedon

Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded; about 3.25 miles south-southeast of McComb, in Liberty Township; about 1,200 feet west and 1,880 feet south of the northeast corner of sec. 7, T. 1 N., R. 10 E.

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; friable; few fine roots; 1 percent rock fragments; neutral; gradual smooth boundary.

A—7 to 13 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine subangular blocky structure; friable; few fine roots; 1 percent rock fragments; neutral; clear wavy boundary.

Bw1—13 to 21 inches; brown (10YR 4/3) loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; 1 percent rock fragments; neutral; gradual smooth boundary.

Bw2—21 to 33 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium subangular blocky structure; firm; few fine roots; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; common faint brown (10YR 4/3) coatings on faces of peds; 1 percent rock fragments; neutral; gradual wavy boundary.

Bw3—33 to 45 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint brown (10YR 4/3) coatings on faces of peds; 1 percent rock fragments; neutral; gradual wavy boundary.

Bw4—45 to 56 inches; brown (10YR 4/3) loam; weak medium and coarse subangular blocky structure; friable; few fine roots; few faint dark grayish brown (10YR 4/2) coatings on faces of peds; few fine faint brown (10YR 5/3) and few fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 1 percent rock fragments; neutral; clear wavy boundary.

C1—56 to 71 inches; brown (10YR 4/3) loam with strata of sandy loam; massive; very friable; few fine distinct yellowish brown (10YR 5/6) and few fine faint brown (10YR 5/3) masses that have accumulated iron and are in the matrix; 1 percent rock fragments; slightly alkaline; clear wavy boundary.

C2—71 to 80 inches; brown (10YR 5/3) sandy loam; massive; very friable; common fine distinct light gray (10YR 7/1) aquatic shells; 2 percent rock fragments; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the solum: 24 to 60 inches
Depth to carbonates: 40 to more than 80 inches
Depth to bedrock: More than 80 inches

A horizon:
Color—hue of 10YR, value of 2 or 3, chroma of 2 or 3
Texture—silt loam or loam
Content of rock fragments—0 to 5 percent

Bw horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 2 to 6
Texture—silt loam or loam
Content of rock fragments—0 to 10 percent

C horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 3 to 6
Texture—loam, sandy loam, silt loam, fine sandy loam, or the gravelly analogs of those textures
Content of rock fragments—0 to 35 percent

Shawtown Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the loamy solum, rapid in the sandy and gravelly substratum, and slow or very slow in the till substratum
Parent material: Stratified glaciolacustrine or water-sorted deposits overlying till

Landform: Flats, rises, and knolls on beach ridges on lake plains, on outwash plains, and in outwash areas on end moraines and ground moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 6 percent
Adjacent soils: On beach ridges—Aurand, Cygnet, Oshtemo; on outwash plains—Alvada, Lamberjack, Thackery; on moraines—Blount, Glynwood, Houcktown

Taxonomic classification: Fine-loamy, mixed, mesic Oxyaquic Hapludalfs

Typical Pedon

Shawtown loam, 2 to 6 percent slopes; about 1 mile west of McComb, in Pleasant Township; about 2,280 feet east and 280 feet south of the northwest corner of sec. 27, T. 2 N., R. 9 E.

Ap—0 to 9 inches; brown (10YR 4/3) loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; few fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bt1—9 to 21 inches; dark yellowish brown (10YR 4/4) loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; 10 percent rock fragments; strongly acid; gradual wavy boundary.

Bt2—21 to 33 inches; dark yellowish brown (10YR 4/4) gravelly clay loam with strata of clay loam; moderate medium subangular blocky structure; friable; few fine roots; many faint brown (10YR 4/3) clay films on faces of peds; 15 percent rock fragments; neutral; clear wavy boundary.

Bt3—33 to 48 inches; yellowish brown (10YR 5/4) gravelly loam; moderate medium subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) and common medium faint brown (10YR 5/3) iron depletions in the matrix; 20 percent rock fragments; neutral; clear wavy boundary.

Bt4—48 to 55 inches; brown (10YR 5/3) gravelly loam with strata of gravelly sandy loam; weak medium and coarse subangular blocky structure; very friable; common faint brown (10YR 5/3) clay films on faces of peds and as bridging between sand grains; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 20 percent rock fragments; slightly effervescent, discontinuously in the lower part; neutral; clear wavy boundary.

Cg—55 to 63 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand with strata of loamy sand; single grain; loose; few medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 20 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cd—63 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive, widely spaced vertical fractures; very firm; common fine distinct gray (10YR 5/1) iron depletions oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 35 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to till: 50 to 70 inches
Depth to dense material: 50 to 70 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—1 to 14 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 3 to 5, chroma of 3 to 6
Texture—loam, clay loam, sandy clay loam, coarse sandy loam, or the gravelly analogs of those textures
Content of rock fragments—5 to 25 percent

C or Cg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture—loamy sand, loamy coarse sand, coarse sandy loam, sandy loam, or the gravelly or very gravelly analogs of those textures
Content of rock fragments—5 to 45 percent

2Cd or 2Cdg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—clay loam, silt loam, or silty clay loam
Content of rock fragments—1 to 7 percent

Shinrock Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow in the upper part of the solum and moderate or moderately slow in the lower part of the solum and in the substratum; slow or very slow in the till part in areas of the Shinrock soil in detailed soil map unit SkB, which is a till substratum phase
Parent material: Glaciolacustrine deposits; glaciolacustrine deposits overlying till in areas of the Shinrock soil in detailed soil map unit SkB
Landform: Knolls and dissected areas on lake plains and disintegration moraines
Position on the landform: Backslopes, shoulders, summits
Slope: 1 to 12 percent
Adjacent soils: Del Rey, Glynwood, Jenera, Patton, Pewamo

Taxonomic classification: Fine, illitic, mesic Aquic Hapludalfs

Typical Pedon

Shinrock silt loam, 2 to 6 percent slopes; about 3 miles south-southeast of McComb, in Liberty Township; about 1,780 feet east and 820 feet south of the northwest corner of sec. 7, T. 1 N., R. 10 E.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; common fine roots; moderately acid; clear smooth boundary.

Bt1—8 to 12 inches; yellowish brown (10YR 5/4) silty clay loam; moderate fine and medium subangular blocky structure; firm; common fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium faint brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; gradual wavy boundary.

Bt2—12 to 18 inches; dark yellowish brown (10YR 4/4) silty clay; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common faint brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; moderately acid; gradual wavy boundary.

Bt3—18 to 29 inches; dark yellowish brown (10YR 4/4) silty clay; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; firm; common faint brown (10YR 4/3) clay films on faces of peds; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; slightly acid; clear smooth boundary.

Bt4—29 to 33 inches; brown (10YR 4/3) silty clay loam; weak medium prismatic structure parting to weak medium and coarse subangular blocky; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine faint brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; common distinct very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of peds; strongly effervescent; slightly alkaline; clear smooth boundary.

BC1—33 to 36 inches; brown (10YR 4/3) silty clay loam; weak medium prismatic structure parting to weak medium and coarse subangular blocky; firm; few fine roots; common faint dark yellowish brown (10YR 4/4) coatings on vertical faces of prisms; few fine and medium faint grayish brown (10YR 5/2) iron depletions in the matrix; few medium and coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; many distinct very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on vertical faces of peds; few medium distinct very pale brown (10YR 7/3) moderately cemented calcium carbonate nodules and concretions in the matrix; strongly effervescent; slightly alkaline; clear smooth boundary.

BC2—36 to 50 inches; yellowish brown (10YR 5/4) silt loam with thin strata of silty clay loam and fine sandy loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common faint dark yellowish brown (10YR 4/4) coatings on vertical faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium and coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct very pale brown (10YR 7/3) moderately cemented calcium carbonate concretions in the matrix; strongly effervescent; slightly alkaline; gradual wavy boundary.

C—50 to 80 inches; yellowish brown (10YR 5/4) silt loam with thin strata of very fine sand; massive; friable; few faint dark yellowish brown (10YR 4/4) coatings on faces of fractures; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium and coarse distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct very pale brown (10YR 7/3) moderately cemented calcium carbonate concretions in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 25 to 55 inches
Depth to carbonates: 20 to 45 inches
Depth to till: More than 80 inches; 60 to 80 inches in areas of the Shinrock soil in detailed soil map unit SkB
Depth to dense material: 60 to 80 inches in areas of the Shinrock soil in detailed soil map unit SkB
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam or silty clay loam

Bt horizon:
Color—hue of 10YR, 7.5YR, or 2.5Y; value of 4 or 5; chroma of 3 to 6
Texture—silty clay, silty clay loam, clay, or clay loam

C or Cg horizon:
Color—hue of 10YR, 7.5YR, or 2.5Y; value of 4 or 5; chroma of 2 to 4
Texture—silt loam or silty clay loam; commonly stratified with textures ranging from very fine sand to silty clay

2Cd or 2Cdg horizon (if it occurs):
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—silty clay loam or clay loam
Content of rock fragments—1 to 7 percent

Shoals Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Parent material: Alluvium
Landform: Flats and rises on flood plains
Slope: 0 to 2 percent
Adjacent soils: Flatrock, Knoxdale, Sloan

Taxonomic classification: Fine-loamy, mixed, nonacid, mesic Aeric Fluvaquents

Typical Pedon

Shoals silt loam, 0 to 2 percent slopes, occasionally flooded; about 1.2 miles northwest of Van Buren, in Allen Township; about 1,380 feet east and 280 feet south of the northwest corner of sec. 12, T. 2 N., R. 10 E.

Ap—0 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium and coarse subangular blocky structure parting to moderate fine and medium granular; friable; few coarse and common fine and medium roots; neutral; clear smooth boundary.

Bg—11 to 16 inches; grayish brown (10YR 5/2) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) and few fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bw1—16 to 21 inches; brown (10YR 5/3) silt loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint grayish brown (10YR 5/2) coatings on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common

fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw2—21 to 32 inches; dark yellowish brown (10YR 4/4) silt loam with thin strata of loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in pores and old root channels; many distinct grayish brown (10YR 5/2) coatings on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bw3—32 to 41 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in pores and old root channels; common faint grayish brown (10YR 5/2) coatings on faces of peds; common medium and coarse faint (10YR 5/2) iron depletions in the matrix; common medium faint dark yellowish brown (10YR 4/4) and common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear smooth boundary.

B'g—41 to 59 inches; grayish brown (2.5Y 5/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; few distinct (10YR 4/2) coatings in pores, in old root channels, and on vertical faces of peds; common distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual smooth boundary.

Cg—59 to 80 inches; grayish brown (2.5Y 5/2) loam with strata of silt loam and sandy loam; massive; friable; few medium and coarse prominent strong brown (7.5YR 5/6) and common medium and coarse distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 10 percent rock fragments in the sandy loam strata; slightly alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to carbonates: 60 to more than 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—silt loam
Content of rock fragments—0 to 5 percent

Bg or Bw horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—silt loam, loam, silty clay loam, or clay loam; commonly stratified
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 5 or 6, chroma of 1 to 6
Texture—loam, sandy loam, fine sandy loam, or silt loam; commonly stratified
Content of rock fragments—0 to 15 percent

Sloan Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate or moderately slow
Parent material: Alluvium; alluvium overlying limestone or dolostone in areas of detailed soil map unit SpA, which is a limestone substratum phase
Landform: Flats and backswamps on flood plains
Slope: 0 to 1 percent
Adjacent soils: Flatrock, Knoxdale, Medway, Rossburg, Shoals

Taxonomic classification: Fine-loamy, mixed, mesic Fluvaquentic Endoaquolls

Typical Pedon

Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded; about 3.5 miles northwest of Benton Ridge, in Blanchard Township; about 2,240 feet north and 740 feet east of the southwest corner of sec. 16, T. 1 N., R. 9 E.

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; moderate fine and medium granular structure; firm; common fine roots; 2 percent rock fragments; neutral; clear smooth boundary.

Bg1—11 to 21 inches; dark gray (10YR 4/1) clay loam; weak fine and medium subangular blocky structure; firm; common fine roots; many faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg2—21 to 27 inches; dark gray (10YR 4/1) silty clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; many faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few very dark gray (10YR 3/1) krotovinas; 2 percent rock fragments; neutral; clear wavy boundary.

Bg3—27 to 32 inches; gray (10YR 5/1) clay loam; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) and common medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few dark gray (10YR 4/1) krotovinas; 2 percent rock fragments; neutral; gradual wavy boundary.

Bg4—32 to 47 inches; gray (10YR 5/1) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common faint dark gray (10YR 4/1) coatings on faces of peds; common medium and coarse distinct dark yellowish brown (10YR 4/4) and few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few dark gray (10YR 4/1) krotovinas; 3 percent rock fragments; neutral; gradual wavy boundary.

Bg5—47 to 58 inches; gray (10YR 5/1) clay loam with strata of clay; weak medium and coarse subangular blocky structure; firm; few faint gray (10YR 5/1) coatings on faces of peds; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 4 percent rock fragments; neutral; gradual wavy boundary.

Cg1—58 to 75 inches; gray (10YR 5/1) loam with strata of clay loam; massive; firm; common medium and coarse prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 4 percent rock fragments; neutral; abrupt wavy boundary.

Cg2—75 to 80 inches; gray (10YR 5/1) silty clay loam with thin strata of silt loam and silty clay; massive; firm; common medium distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 1 percent rock fragments; neutral.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 24 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 60 to more than 80 inches
Depth to bedrock: More than 80 inches; 60 to 80 inches in areas of detailed soil map unit SpA, which is a limestone substratum phase

Ap horizon:
Color—hue of 10YR or 2.5Y, value of 2 or 3, chroma of 1 or 2
Texture—silty clay loam or loam
Content of rock fragments—0 to 5 percent

Bg horizon:
Color—hue of 10YR, 2.5Y, or 5Y or is neutral; value of 4 or 5; chroma of 0 to 2
Texture—clay loam, silty clay loam, loam, or silt loam
Content of rock fragments—0 to 5 percent

C or Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—clay loam, silty clay loam, loam, sandy loam, or the gravelly analogs of those textures; commonly stratified
Content of rock fragments—0 to 20 percent

St. Clair Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow in the solum and slow or very slow in the substratum
Parent material: Till
Landform: Dissected areas on lake plains; knolls and dissected areas on end moraines
Position on the landform: Shoulders, backslopes
Slope: 2 to 12 percent
Adjacent soils: Hoytville, Mortimer, Nappanee

Taxonomic classification: Fine, illitic, mesic Oxyaquic Hapludalfs

Typical Pedon

St. Clair silty clay loam, 2 to 6 percent slopes, eroded; about 4 miles southwest of McComb, in Blanchard Township; about 180 feet east and 460 feet north of the southwest corner of sec. 8, T. 1 N., R. 9 E.

Ap—0 to 4 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; weak medium and coarse subangular blocky structure parting to moderate medium granular; firm; few coarse and common fine and medium roots; 15 percent intermixed areas of yellowish brown (10YR 5/4) Bt1 material; 1 percent rock fragments; slightly acid; gradual smooth boundary.

Bt1—4 to 10 inches; yellowish brown (10YR 5/4) silty clay; weak medium subangular blocky structure; firm; common fine and medium roots; common faint brown (10YR 5/3) clay films on faces of peds; common fine and medium faint dark yellowish brown (10YR 4/4) and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common medium faint brown (10YR 5/3) iron depletions in the matrix; common distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; neutral; clear wavy boundary.

Bt2—10 to 19 inches; yellowish brown (10YR 5/4) silty clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common faint brown (10YR 5/3) clay films on faces of peds; common medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common medium faint brown (10YR 5/3) iron depletions in the matrix; common distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; slightly alkaline; gradual wavy boundary.

Bt3—19 to 27 inches; yellowish brown (10YR 5/4) silty clay; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common faint brown (10YR 5/3) and few distinct grayish brown (10YR 5/2) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium faint dark yellowish brown (10YR 4/4) and common fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; few faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of peds; 3 percent rock fragments; strongly effervescent; slightly alkaline; gradual wavy boundary.

Bt4—27 to 37 inches; yellowish brown (10YR 5/4) silty clay; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common faint brown (10YR 5/3) clay films on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide on faces of peds; common faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of peds; 4 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

BC—37 to 48 inches; yellowish brown (10YR 5/4) silty clay; moderate coarse prismatic structure parting to weak medium and coarse subangular blocky; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; common faint very pale brown (10YR 7/3) masses that have accumulated calcium carbonate and are on faces of peds; 4 percent rock fragments; strongly effervescent; moderately alkaline; gradual irregular boundary.

Cd—48 to 80 inches; yellowish brown (10YR 5/4) silty clay; massive, widely spaced fractures; firm; common distinct gray (10YR 5/1) coatings on faces of fractures; few fine distinct grayish brown (10YR 5/2) iron depletions oriented along fractures; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; few distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of fractures; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of fractures; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 20 to 55 inches
Depth to carbonates: 18 to 30 inches
Depth to dense material: 20 to 55 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 7.5YR, value of 3 or 4, chroma of 2 or 3
Texture—silty clay loam
Content of rock fragments—0 to 7 percent

Bt horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 3 or 4
Texture—silty clay or clay
Content of rock fragments—1 to 7 percent

Cd or Cdg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 1 to 4
Texture—silty clay, clay, silty clay loam, or clay loam
Content of rock fragments—1 to 15 percent

Thackery Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the loamy solum, rapid or very rapid in the gravelly substratum, and slow or very slow in the till substratum
Parent material: Loamy, sandy, and gravelly deposits overlying till
Landform: Rises and flats on outwash plains and stream terraces
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent
Adjacent soils: Alvada, Lamberjack, Oshtemo, Shawtown

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludalfs

Typical Pedon

Thackery loam, till substratum, 0 to 2 percent slopes; about 4 miles east of Findlay, in Marion Township; about 1,480 feet south and 380 feet east of the northwest corner of sec. 12, T. 1 N., R. 11 E.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) loam, pale brown (10YR 6/3) dry; moderate fine and medium granular structure; friable; few fine roots; 5 percent rock fragments; slightly acid; clear smooth boundary.

Bt1—10 to 17 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint brown (10YR 5/3) clay films on faces of peds; common medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common medium faint brown (10YR 5/3) iron depletions in the matrix; 10 percent rock fragments; slightly acid; gradual wavy boundary.

Bt2—17 to 25 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common distinct brown (10YR 5/3) clay films on faces of peds; few fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium faint brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on the faces of peds; 12 percent rock fragments; neutral; clear wavy boundary.

Bt3—25 to 35 inches; dark yellowish brown (10YR 4/4) gravelly clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; 17 percent rock fragments; neutral; gradual wavy boundary.

Bt4—35 to 46 inches; dark yellowish brown (10YR 4/4) gravelly clay loam; moderate medium subangular blocky structure; friable; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; 20 percent rock fragments; slightly alkaline; gradual wavy boundary.

Bt5—46 to 51 inches; brown (10YR 5/3) gravelly clay loam; weak medium subangular blocky structure; friable; few fine roots; many faint grayish brown (10YR 5/3) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) iron

depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) and few medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 17 percent rock fragments; slightly alkaline; clear wavy boundary.

Bt6—51 to 56 inches; brown (10YR 5/3) gravelly clay loam; weak medium subangular blocky structure; very friable; common faint grayish brown (10YR 5/2) clay films on faces of peds and clay bridging between sand grains; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 22 percent rock fragments; slightly effervescent, discontinuously in the matrix; slightly alkaline; abrupt smooth boundary.

Cg—56 to 69 inches; grayish brown (10YR 5/2) gravelly loamy coarse sand with strata of loamy sand; single grain; loose; few medium and coarse distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 20 percent rock fragments; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Cdg—69 to 80 inches; dark gray (2.5Y 4/1) clay loam; massive; very firm; few medium prominent dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 60 inches
Depth to till: 60 to 80 inches
Depth to dense material: 60 to 80 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 or 3
Texture—loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 7.5YR, value of 4 or 5, chroma of 2 to 6
Texture—clay loam, loam, sandy clay loam, or the gravelly analogs of those textures
Content of rock fragments—2 to 25 percent

C or Cg horizon:
Color—hue of 10YR, value of 4 to 6, chroma of 1 to 4
Texture—gravelly or very gravelly analogs of loamy sand, sand, or loamy coarse sand; commonly stratified
Content of rock fragments—15 to 30 percent

2Cd or 2Cdg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 1 to 4
Texture—clay loam, loam, or silty clay loam
Content of rock fragments—1 to 7 percent

Tiderishi Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the solum and moderately slow or slow in the substratum
Parent material: Stratified loamy glaciolacustrine deposits overlying till
Landform: Rises and flats on lake plains
Position on the landform: Summits
Slope: 0 to 2 percent
Adjacent soils: Jenera, Rensselaer, Vanlue

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Argiudolls

Typical Pedon:

Tiderishi loam, 0 to 2 percent slopes; about 4 miles west-southwest of Benton Ridge, in Union Township; about 380 feet north and 2,280 feet east of the southwest corner of sec. 6, T. 1 S., R. 9 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak fine and medium granular structure; friable; many fine and medium roots; 2 percent rock fragments; moderately acid; clear smooth boundary.

A—9 to 11 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common fine and medium roots; few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; common fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; moderately acid; clear wavy boundary.

Bt1—11 to 18 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine and medium distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; common fine and

medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 2 percent rock fragments; moderately acid; gradual wavy boundary.

Bt2—18 to 28 inches; yellowish brown (10YR 5/4) clay loam with thin strata of loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; common fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium and coarse distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common medium distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese concretions in the matrix; 2 percent rock fragments; slightly acid; gradual wavy boundary.

Bt3—28 to 36 inches; brown (10YR 5/3) loam; moderate fine and medium subangular blocky structure; friable; common fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; common medium and coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium and coarse prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; 3 percent rock fragments; neutral; clear wavy boundary.

Bt4—36 to 42 inches; yellowish brown (10YR 5/4) loam with thin strata of silty clay loam; weak medium subangular blocky structure; friable; few fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine distinct very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear wavy boundary.

Bt5—42 to 49 inches; brown (10YR 5/3) fine sandy loam with strata of loamy fine sand; weak medium subangular blocky structure; very friable; few fine roots; few faint grayish brown (10YR 5/2) clay films on faces of peds and as bridging between sand grains; common medium faint dark grayish brown (10YR 4/2) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few fine faint very dark grayish brown (10YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; abrupt wavy boundary.

BC—49 to 57 inches; yellowish brown (10YR 5/4) silt loam; weak medium platy structure; friable; few distinct grayish brown (10YR 5/2) coatings on vertical faces of peds; common medium and coarse distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few medium distinct light gray (10YR 7/2) calcium carbonate concretions in the matrix; 2 percent rock fragments; strongly effervescent; slightly alkaline; clear wavy boundary.

2C—57 to 80 inches; dark yellowish brown (10YR 4/4) clay loam; massive, widely spaced vertical fractures; firm; few fine distinct grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 15 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 35 to 60 inches
Depth to till: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap and A horizons:
Color—hue of 10YR or 2.5Y or is neutral; value of 2, 2.5, or 3; chroma of 0 to 2
Texture—loam
Content of rock fragments—0 to 5 percent

Bt or Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 2 to 4
Texture—loam, clay loam, silty clay loam, silt loam, sandy clay loam, or fine sandy loam; commonly stratified
Content of rock fragments—0 to 10 percent

2C or 2Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 to 4
Texture—silt loam, clay loam, loam, or silty clay loam
Content of rock fragments—1 to 7 percent

Toledo Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Slow
Parent material: Glaciolacustrine deposits
Landform: Depressions and drainageways on lake plains
Slope: 0 to 1 percent
Adjacent soils: Fulton, Lucas

Taxonomic classification: Fine, illitic, nonacid, mesic Mollic Endoaquepts

Typical Pedon

Toledo silty clay loam, 0 to 1 percent slopes; about 3 miles northeast of Gilboa, in Blanchard Township; about 120 feet south and 160 feet east of the northwest corner of sec. 18, T. 1 N., R. 9 E.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silty clay loam, grayish brown (10YR 5/2) dry; weak fine granular structure; firm; common fine roots; neutral; abrupt smooth boundary.

Bg1—9 to 22 inches; grayish brown (10YR 5/2) silty clay; moderate fine and medium subangular blocky structure; firm; few fine roots; common faint gray (10YR 5/1) coatings on faces of peds; few distinct very dark grayish brown (10YR 3/2) organic coatings on vertical faces of peds; few fine faint dark grayish brown (10YR 4/2) iron depletions in the matrix; common medium distinct brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; neutral; clear wavy boundary.

Bg2—22 to 36 inches; dark grayish brown (10YR 4/2) silty clay; moderate medium and coarse subangular blocky structure; very firm; few fine roots; common distinct gray (10YR 5/1) coatings on faces of peds; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; neutral; clear wavy boundary.

Bg3—36 to 50 inches; grayish brown (10YR 5/2) silty clay; weak coarse prismatic structure parting to moderate coarse subangular blocky; very firm; common faint grayish brown (10YR 5/2) coatings on faces of peds; many medium distinct brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; neutral; clear wavy boundary.

BC—50 to 59 inches; yellowish brown (10YR 5/4) silty clay; weak coarse prismatic structure parting to moderate coarse subangular blocky; very firm; few distinct gray (10YR 5/1) coatings on vertical faces of peds; common medium and coarse distinct gray (10YR 6/1) iron depletions in the matrix; common medium faint brown (7.5YR 5/4) masses that have accumulated iron and are in the matrix; slightly effervescent; slightly alkaline; clear wavy boundary.

C—59 to 80 inches; yellowish brown (10YR 5/4) silty clay; massive, widely spaced vertical fractures; very firm; few distinct gray (10YR 5/1) coatings on faces of fractures; common medium and coarse distinct gray (10YR 6/1) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; strongly effervescent; slightly alkaline.

Range in Characteristics

Thickness of the dark epipedon: 7 to 9 inches
Thickness of the solum: 30 to 60 inches
Depth to carbonates: 30 to 50 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 2.5Y or is neutral; value of 2 or 3; chroma of 0 to 2
Texture—silty clay loam

Bg horizon:
Color—hue of 10YR, 2.5Y, or 5Y or is neutral; value of 4 to 6; chroma of 0 to 2
Texture—silty clay or clay

C or Cg horizon:
Color—hue of 10YR, 2.5Y, or 5Y or is neutral; value of 4 to 6; chroma of 0 to 4
Texture—silty clay, clay, or silty clay loam

Tuscola Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Parent material: Stratified glaciolacustrine deposits
Landform: Rises, knolls, and flats on lake plains
Position on the landform: Backslopes, shoulders, summits
Slope: 0 to 6 percent
Adjacent soils: Colwood, Darroch, Patton, Shinrock

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludalfs

Typical Pedon

Tuscola fine sandy loam, 2 to 6 percent slopes; about 3.5 miles northwest of Benton Ridge, in Blanchard Township; about 2,050 feet west and 2,400 feet south of the northeast corner of sec. 17, T. 1 N., R. 9 E.

Ap—0 to 11 inches; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; very friable; many fine roots; slightly acid; clear smooth boundary.

Bt1—11 to 16 inches; yellowish brown (10YR 5/4) loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; few distinct dark brown (10YR 3/3) organic coatings on vertical faces of peds; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium faint brown (10YR 5/3) iron depletions in the matrix; neutral; clear wavy boundary.

Bt2—16 to 25 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common distinct grayish brown (10YR 5/2) and few distinct brown (10YR 4/3) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint (10YR 4/4) and few fine distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; gradual wavy boundary.

Bt3—25 to 31 inches; yellowish brown (10YR 5/4) loam with strata of silt loam; moderate fine and medium subangular blocky structure; friable; common fine roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common distinct very dark grayish brown (10YR 3/2) masses that have accumulated iron and manganese oxide and are on faces of peds; neutral; clear wavy boundary.

BC—31 to 44 inches; yellowish brown (10YR 5/4) fine sandy loam with strata of silt loam; weak fine and medium subangular blocky structure; friable; few fine roots; few distinct grayish brown (10YR 5/2) clay films on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; slightly alkaline; gradual wavy boundary.

C1—44 to 52 inches; yellowish brown (10YR 5/4) silt loam with strata of fine sand; massive; very friable; few fine roots; few distinct dark grayish brown (10YR 4/2) coatings in relict root channels; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; slightly effervescent; slightly alkaline; gradual wavy boundary.

C2—52 to 80 inches; brown (10YR 5/3) silt loam with strata of fine sand; massive; very friable; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 30 to 50 inches
Depth to carbonates: 30 to 50 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 1 to 3
Texture—fine sandy loam, loamy fine sand, or silt loam

Bt or Btg horizon:
Color—hue of 7.5YR, 10YR, or 2.5Y; value of 4 to 6; chroma of 2 to 6
Texture—loam, clay loam, silty clay loam, silt loam, sandy clay loam, fine sandy loam, or sandy loam

C or Cg horizon:
Color—hue of 10YR or 7.5YR, value of 4 to 6, chroma of 1 to 6
Texture—silt loam, very fine sandy loam, fine sandy loam, fine sand, or very fine sand; commonly stratified; strata of clay, silty clay, or silty clay loam in some pedons

Vanlue Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate in the loamy solum, moderately slow in the lower part of the solum and in the glaciolacustrine substratum, and slow or moderately slow in the till substratum

Parent material: Stratified loamy and silty glaciolacustrine deposits overlying till
Landform: Rises on lake plains
Position on the landform: Summits, shoulders
Slope: 0 to 2 percent
Adjacent soils: Jenera, Rensselaer, Tiderishi

Taxonomic classification: Fine-loamy, mixed, mesic Aquic Hapludalfs

Typical Pedon

Vanlue loam, 0 to 2 percent slopes; about 3.6 miles west of Benton Ridge, in Blanchard Township; about 520 feet north and 360 feet west of the southeast corner of sec. 30, T. 1 N., R. 9 E.

Ap—0 to 10 inches; dark brown (10YR 3/3) loam, very pale brown (10YR 7/3) dry; moderate fine and medium granular structure; friable; few fine roots; common fine and medium faint dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; clear smooth boundary.

Bt1—10 to 15 inches; yellowish brown (10YR 5/4) clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; common distinct brown (10YR 5/3) and grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) and few fine distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct dark brown (7.5YR 3/2) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bt2—15 to 21 inches; brown (10YR 5/3) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; many faint grayish brown (10YR 5/2) clay films on faces of peds; common medium faint grayish brown (10YR 5/2) and common fine distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bt3—21 to 28 inches; dark yellowish brown (10YR 4/4) clay loam with thin strata of loam and silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; neutral; gradual wavy boundary.

Bt4—28 to 35 inches; dark yellowish brown (10YR 4/4) clay loam with thin strata of sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium faint yellowish brown (10YR 5/4) and few fine and medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; neutral; clear wavy boundary.

2Bt5—35 to 40 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common distinct gray (10YR 5/1) clay films on faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common fine and medium distinct very dark gray (10YR 3/1) moderately cemented iron and manganese oxide concretions in the matrix; slightly alkaline; clear wavy boundary.

2BC—40 to 44 inches; yellowish brown (10YR 5/4) silty clay loam with thin, discontinuous strata of loam; weak medium subangular blocky structure; firm; few fine roots on vertical faces of peds; common distinct gray (10YR 5/1) coatings on vertical faces of peds; common medium distinct gray (10YR 5/1) iron depletions in the matrix; common fine and medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; common distinct light gray (10YR 7/2) masses that have accumulated calcium carbonate and are on faces of peds; many faint very pale brown (10YR 7/3) moderately cemented calcium carbonate concretions in the matrix; strongly effervescent; slightly alkaline; clear wavy boundary.

2C1—44 to 59 inches; olive brown (2.5Y 4/4) silt loam; massive, weak medium platy structure; firm; thin lenses of fine sand on faces of plates; common medium prominent gray (10YR 5/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 1 percent

rock fragments; strongly effervescent; moderately alkaline; clear wavy boundary.

3C2—59 to 80 inches; yellowish brown (10YR 5/4) clay loam; massive; firm; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 4 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 40 to 65 inches
Depth to carbonates: 25 to 50 inches
Depth to till: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR, value of 3 or 4, chroma of 2 or 3
Texture—loam
Content of rock fragments—0 to 3 percent

Bt or Btg horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 2 to 4
Texture—loam, clay loam, or sandy clay loam; commonly stratified
Content of rock fragments—0 to 7 percent

2Bt, 2Btg, 2BCg, or 2BC horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—silt loam or silty clay loam; commonly stratified
Content of rock fragments—less than 1 percent

2C or 2Cg horizon:
Color—hue of 10YR or 2.5Y, value of 4 or 5, chroma of 2 to 4
Texture—silt loam or silty clay loam; commonly stratified
Content of rock fragments—0 or 1 percent

3C horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—clay loam, loam, silt loam, or silty clay loam
Content of rock fragments—1 to 7 percent

Vaughnsville Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part of the solum, slow or moderately slow in the lower part of the solum, and slow or very slow in the substratum
Parent material: Loamy glaciolacustrine deposits and the underlying till
Landform: Rises on beach ridges on lake plains
Position on the landform: Footslopes
Slope: 0 to 3 percent
Adjacent soils: Aurand, Fox, Haskins, Mermill, Oshtemo, Shawtown

Taxonomic classification: Fine-loamy, mixed, mesic Oxyaquic Hapludalfs

Typical Pedon

Vaughnsville loam, 0 to 3 percent slopes (fig. 17); about 3 miles west of Van Buren, in Portage Township; about 1,280 feet west and 1,840 feet north of the southeast corner of sec. 16, T. 2 N., R. 10 E.

Ap—0 to 8 inches; dark reddish brown (2.5YR 3/4) loam, reddish brown (5YR 5/4) dry; weak coarse subangular blocky structure parting to moderate fine and medium granular; friable; common fine and few medium roots; common distinct reddish brown (5YR 4/3) organic coatings on faces of peds and in root channels; 2 percent rock fragments; slightly acid; clear smooth boundary.

Bt1—8 to 14 inches; yellowish red (5YR 4/6) clay loam; moderate fine and medium subangular blocky structure; friable; common fine and few medium roots; common distinct reddish brown (5YR 4/4) clay films on vertical faces of peds; common medium and coarse faint dark red (2.5YR 3/6) and few fine distinct brown (7.5YR 4/4) masses that have accumulated iron and are in the matrix; 2 percent rock fragments; slightly acid; abrupt wavy boundary.

Bt2—14 to 20 inches; brown (7.5YR 4/4) clay loam; moderate fine and medium subangular blocky structure; firm; common fine and few medium roots; common prominent yellowish red (5YR 4/6) and common faint brown (7.5YR 4/4) clay films on faces of peds; common distinct yellowish red (5YR 4/6) linings in root and worm channels; common medium distinct yellowish red (5YR 4/6) masses that have accumulated iron and are in the matrix; few fine faint brown (10YR 5/3) iron depletions in the matrix; few medium prominent very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are in the matrix; 2 percent rock fragments; neutral; clear wavy boundary.

Bt3—20 to 30 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky

structure; friable; common fine and few medium roots; common faint brown (10YR 5/3) clay films on faces of peds; common prominent yellowish red (5YR 4/6) linings in root channels and worm channels; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; few distinct very dark gray (10YR 3/1) masses that have accumulated iron and manganese oxide and are on faces of peds; 2 percent rock fragments; neutral; clear smooth boundary.

BC1—30 to 36 inches; brown (10YR 5/3) sandy loam with thin strata of loamy sand; weak fine and medium subangular blocky structure; very friable; common fine and few medium roots; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; common fine faint yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 10 percent rock fragments; slightly alkaline; abrupt smooth boundary.

2BC2—36 to 45 inches; yellowish brown (10YR 5/4) clay loam; weak medium and coarse subangular blocky structure; firm; few fine roots; common distinct grayish brown (10YR 5/2) coatings and few distinct light gray (10YR 7/2) calcium carbonate coatings on vertical faces of peds; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; slightly effervescent; moderately alkaline; gradual wavy boundary.

2Cd—45 to 80 inches; brown (10YR 4/3) clay loam; massive, widely spaced vertical fractures; very firm; common medium faint grayish brown (10YR 5/2) iron depletions and few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron and are oriented along fractures; 5 percent rock fragments; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the solum: 25 to 50 inches
Depth to carbonates: 25 to 45 inches
Depth to till: 20 to 40 inches
Depth to dense material: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 2.5YR, 5YR, or 10R; value of 3 or 4; chroma of 4 to 6
Texture—loam
Content of rock fragments—0 to 14 percent

Bt horizon:
Color—hue of 2.5YR, 5YR, or 7.5YR, value of 3 to 6, chroma of 3 to 6 in the upper part of the horizon; hue of 7.5YR or 10YR, value of 4 or 5, chroma of 3 to 6 in the lower part
Texture—clay loam, loam, or sandy clay loam in the upper part of the horizon; loam, sandy loam, sandy clay loam, or the gravelly analogs of those textures in the lower part
Content of rock fragments—0 to 20 percent

2Bt or 2BC horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—1 to 7 percent

2Cd horizon:
Color—hue of 10YR, value of 4 or 5, chroma of 3 or 4
Texture—clay loam, silty clay loam, clay, or silty clay
Content of rock fragments—1 to 7 percent

Westland Series

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Moderate in the solum and very rapid in the underlying sandy and gravelly material
Parent material: Loamy deposits and the underlying sandy and gravelly outwash
Landform: Glacial drainage channels; drainageways and depressions on outwash plains
Slope: 0 to 1 percent
Adjacent soils: Fox, Oshtemo, Rensselaer

Taxonomic classification: Fine-loamy, mixed, mesic Typic Argiaquolls

Typical Pedon

Westland loam, in an area of Westland-Rensselaer complex, 0 to 1 percent slopes; about 1.25 miles west of Mt. Cory, in Union Township; about 780 feet west

and 1,320 feet north of the southeast corner of sec. 20, T. 1 S., R. 9 E.

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure parting to moderate fine and medium granular; friable; common fine roots; few fine distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 3 percent rock fragments; neutral; clear smooth boundary.

BA—10 to 17 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; friable; common fine roots; common medium faint dark gray (10YR 4/1) iron depletions in the matrix; few fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; neutral; gradual wavy boundary.

Btg1—17 to 26 inches; dark gray (10YR 4/1) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds; common fine and medium prominent strong brown (7.5YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 5 percent rock fragments; neutral; clear wavy boundary.

Btg2—26 to 36 inches; dark gray (10YR 4/1) clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds and bridging between sand grains; many fine and medium prominent strong brown (7.5YR 5/6) and common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 10 percent rock fragments; neutral; clear wavy boundary.

Btg3—36 to 44 inches; dark grayish brown (10YR 4/2) loam with strata of sandy loam; weak medium subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds and bridging between sand grains; common medium faint dark gray (10YR 4/1) iron depletions in the matrix; common medium and coarse distinct dark yellowish brown (10YR 4/4) and common fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 8 percent rock fragments; neutral; clear wavy boundary.

Btg4—44 to 52 inches; dark grayish brown (10YR 4/2) loam; weak medium and coarse subangular blocky structure; friable; few fine roots; common faint dark gray (10YR 4/1) clay films on faces of peds and bridging between sand grains; few fine and medium prominent strong brown (7.5YR 5/6) and few medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron and are in the matrix; 10 percent rock fragments; neutral; gradual wavy boundary.

2BCg—52 to 59 inches; dark gray (10YR 4/1) gravelly sandy loam; weak medium subangular blocky structure; very friable; few faint dark gray (10YR 4/1) clay bridging sand grains; few fine and medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron and are in the matrix; 20 percent rock fragments; slightly effervescent; slightly alkaline; clear wavy boundary.

2Cg—59 to 80 inches; dark gray (10YR 4/1) gravelly loamy coarse sand with strata of loamy coarse sand and fine sand; single grain; loose; few medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron and are in the matrix; 20 percent rock fragments in the gravelly strata and 5 percent rock fragments in the loamy coarse sand strata; strongly effervescent; moderately alkaline.

Range in Characteristics

Thickness of the mollic epipedon: 10 to 20 inches
Thickness of the solum: 40 to 60 inches
Depth to carbonates: 40 to 60 inches
Depth to bedrock: More than 80 inches

Ap horizon:
Color—hue of 10YR or 2.5Y, value of 2 or 3, chroma of 1 to 3
Texture—loam
Content of rock fragments—0 to 4 percent

Btg horizon:
Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2
Texture—loam, clay loam, or silty clay loam in the upper part of the horizon and loam, clay loam, or sandy clay loam in the lower part
Content of rock fragments—0 to 5 percent in the upper part of the horizon and 0 to 15 percent in the lower part

2BCg horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 6, chroma of 1 or 2

Texture—loam, clay loam, sandy loam, sandy clay loam, or the gravelly analogs of those textures

Content of rock fragments—5 to 35 percent

2Cg or 2C horizon:

Color—hue of 10YR or 2.5Y, value of 4 to 7, chroma of 1 to 4

Texture—gravelly or very gravelly analogs of loamy coarse sand or coarse sand; commonly stratified

Content of rock fragments—15 to 50 percent

Formation of the Soils

This section describes the major factors of soil formation and relates them to the soils in Hancock County. Also, it describes some of the processes of soil formation.

Factors of Soil Formation

Soil is a three-dimensional natural body capable of supporting plant growth. The nature of the soil at a specific site is the result of the interaction of many factors and processes. The major factors of soil formation are parent material, climate, living organisms, relief, and time.

Parent Material

The material in which a soil forms is called parent material. Most of the parent material in Hancock County was deposited by the last glacier that covered the area thousands of years ago or by meltwater from this glacier. Other parent material includes older dolostone or limestone bedrock, more recent alluvium deposited by modern streams, and organic material derived from decaying plants.

Most of the till in the county was deposited directly beneath glacial ice with little action by water. The till contains a variety of particles, ranging in size from clay to large stones. Most of the pebbles are angular or subangular, indicating little water action. Although most of the material in the till is of local origin, some igneous stones were carried from parts of Canada. The till at the soil surface was deposited during the Wisconsinan glaciation.

The till plains in Hancock County are either ground moraines, end moraines, or disintegration moraines. The till plain deposits are massive and compact. They are silty clay loam or clay loam. Variations in the content of clay and sand appear to be related to readvances of the glacier into local glaciolacustrine deposits. Blount, Glynwood, Lybrand, Morley, Mortimer, and Pewamo soils formed in till.

Some of the till in the county was subject to modification by water action during various stages of lake formation during and after the Wisconsinan glaciation. Water-modified till primarily occupies the surficial deposits in the northern and west-central parts of the county. It is the parent material of the Hoytville and Nappanee soils.

Loamy and sandy sediments were deposited by water or wave action, either along old lake shorelines or as longshore bars. The loamy Arkport, Cygnet, Fox, Oshtemo, Rimer, and Shawtown soils formed in sandy, gravelly, or sandy and gravelly beach deposits on terraces along old shorelines.

Meltwater deposits were laid down by water from the melting glacier. Gravel and sand were deposited in rapidly moving, sloping streams. Alvada, Fox, Lamberjack, Thackery, and Westland soils formed in loamy material and the underlying sandy and gravelly deposits on stream terraces and in outwash areas. As the streams lost gradient or stream velocity, the finer sand and silt particles were deposited as deltas and bars and in local lake basins. Colwood, Darroch, Jenera, Patton, Rensselaer, Tiderishi, Tuscola, and Vanlue soils formed in sandy, loamy, and silty sediments. Where the streams flowed into local lakes, the finer particles settled out of the still water.

Clayey glaciolacustrine deposits are of limited extent in Hancock County. They were deposited in a large basin known as Glacial Lake Maumee, which held meltwater from the retreating glacier and water from precipitation. Del Rey, Fulton, Lucas, Shinrock, and Toledo soils formed in clayey sediments in the basins of former glacial lakes.

Dolostone or limestone is the parent material of the Biglick, Channahon, Joliet, Millsdale, Milton, and Randolph soils. This limestone has a very high calcium carbonate equivalent, but it is not violently effervescent because of the dolomitic nature of the limestone.

Alluvium is the parent material of the soils on flood plains. These materials accumulate when fresh sediments are added by stream overflow. The composition of the deposits varies widely, depending on the stream gradient and the source of the sediment. Alluvial deposits are stratified because deposition occurs in three basic stages. Gravel and stones are deposited on the streambed; sand is deposited as bars along meandering inner banks; and sand, silt, and clay are deposited on the flood plain

during flooding. Flatrock, Harrod, Knoxdale, Medway, Rossburg, Shoals, and Sloan soils formed in alluvium.

The upper part of the Adrian soils formed in decayed plant material that accumulated in marshes. The permanently wet conditions in the marshes slowed decomposition and thus allowed the organic material to accumulate.

Climate

The climate in Hancock County is uniform enough that it has not greatly contributed to differences among the soils. Climate has favored physical change and chemical weathering of the parent material and the activity of living organisms.

The amount of precipitation varies as a result of microclimate. Runoff on steep slopes reduces the amount of effective precipitation and drainage into depressions increases it. Rainfall has been adequate to leach from the upper part of the subsoil any carbonates that were in the parent material of some of the soils on uplands and terraces. Wetting and drying cycles have resulted in the translocation of clay minerals and the formation of soil structure.

The range in temperature has favored both physical change and chemical weathering of the parent material. Freezing and thawing aid the formation of soil structure. Warm temperatures in summer favor chemical reactions in the weathering of the primary minerals. Rainfall and temperatures have been conducive to plant growth and to the accumulation of organic matter in all of the soils.

Living Organisms

The vegetation under which a soil forms influences soil properties, such as soil color, structure, reaction, and the content and distribution of organic matter. The surface layer of soils that formed under trees is generally lighter in color than the surface layer of soils that formed under grass. Grasses generally return more organic matter to the soil than trees. They also provide shelter for many burrowing animals that alter the structure and thickness of soil horizons. Earthworms, burrowing insects, and small animals are constantly mixing the soil, making it more porous and adding organic residue. Bacteria, fungi, and other micro-organisms contribute to the breakdown of organic residue. Generally, fungi are more active in acid soils and bacteria are more active in alkaline soils.

Four native plant communities are recognized as the original vegetation of Hancock County. The dominant type is the beech forest community. Beech, sugar maple, red oak, white ash, white oak, and basswood were the common species (Gordon 1969). This community was associated with Blount, Glynwood, Lybrand, and Morley soils. The elm-ash swamp forest consisted of American elm, black ash, red maple, pin oak, swamp white oak, and hickory. This community was associated with Colwood, Hoytville, Mermill, Patton, Pewamo, Rensselaer, and other very poorly drained soils. The mixed oak forest consisted of many primary forest types but was mainly white oak, black oak, and northern red oak. This community was associated with the better drained soils of Limestone Ridge, specifically Biglick, Channahon, Glynwood, Milton, and Morley soils. The marsh and fen plant communities were associated with the very poorly drained Adrian and Gilford soils. These communities consisted of a wide variety of water-tolerant species. Shrubs were common in these areas, but trees were rare (Gordon 1969).

Human activities also affect soil formation. Examples of these activities are cultivating, seeding, installing drainage systems, irrigating, and cutting and filling. Accelerated erosion caused by clearing and cultivating the more sloping soils, such as Glynwood, Lucas, Morley, Mortimer, Shinrock, and St. Clair soils, illustrates the impact of human activities on soil formation. Loss of surface soil and compaction of the subsoil affect runoff and plant growth. Large areas of the Hoytville, Patton, and Pewamo soils have been systematically drained by ditches and subsurface drains. Drainage reduces the content of organic matter and affects the processes of soil formation. Adding lime or fertilizer also affects the long-term development of the soil.

Relief

Relief, along with parent material, affects the natural drainage of soils. It influences the amount of runoff and the depth to the water table. Generally, the steeper soils have better drainage than the nearly level soils. If the extent of drainage differs, different soils can form in the same parent material. For example, both Glynwood and Pewamo soils formed in till deposits. Glynwood soils are in higher positions on the landscape than the Pewamo soils, and their water table generally is not so close to the surface. Glynwood soils are moderately well drained. Pewamo soils are in low, level areas, and their water table is near or above the surface. Pewano soils are very poorly drained.

A drainage sequence, or soil catena, is a group of soils that formed in the same parent material but differ in the extent of natural drainage. For example, the well drained Lybrand soils, the moderately well drained Glynwood and Morley soils, the somewhat poorly

drained Blount soils, and the very poorly drained Pewamo soils make up a drainage sequence. All of these soils formed in silty clay loam and clay loam till.

Time

The length of time during which the parent material has been exposed to the soil-forming processes influences the nature of the soil that forms. The youngest soils in Hancock County are those that formed in recent stream deposits, such as Flatrock, Knoxdale, and Rossburg soils. Younger soils have horizons that are less well defined than those in the older soils.

The glacial deposits in Hancock County are of Wisconsinan age and are geologically young. Nevertheless, sufficient time has elapsed for the active forces of climate and plants and animals to produce distinct horizons. In most of the soils, carbonates have been leached, structure has developed in the subsoil, and organic matter has accumulated in the surface layer.

Processes of Soil Formation

Soil forms through complex, continuing processes. These processes are grouped into four general categories—addition, removal, transfer, and alteration. To varying degrees, each of the four soil-forming processes has affected all of the soils in Hancock County.

The accumulation of organic matter in the formation of mineral soils is an example of the addition process. The addition of organic residue has produced a dark surface layer. The upper part of the parent material originally was not darker than the lower part. The accumulation of organic matter has been prominent in the formation of Adrian soils.

The loss of lime from the upper 2 to 4 feet of many of the soils in Hancock County is an example of the removal process. Although the parent material was limy (calcareous), water percolating through the soil has leached the lime from the upper part of the soil.

Water is the carrier for most of the transfers that have occurred in the formation of soils in Hancock County. Clay has been transferred from the A and E horizons to the B horizon in many of the soils. The A and E horizons, especially the E horizon, have become zones of eluviation, and the B horizon is a zone of illuviation. Thin clay films are in pores and on the faces of peds in the B horizon of some soils. The presence of clay films is an important criterion in soil classification. The removal of carbonates and the transfer of clay have been prominent in the formation of Glynwood and Shinrock soils.

The reduction and dissolution of ferrous iron is an alteration process. This process has taken place in the very poorly drained soils and, to a lesser extent, in the somewhat poorly drained and moderately well drained soils. Reduction of iron, or gleying, is evident in the very poorly drained Colwood, Hoytville, and Pewamo soils. It is the result of a recurring water table. Gray soil colors indicate gleying. Reduced iron is soluble; however, the iron in the soils in Hancock County commonly has remained in the horizon where it originated or has settled in an underlying horizon. Iron can be reoxidized and segregated in places to form yellowish brown redoximorphic concentrations that are brighter than the surrounding soil. The alteration of iron causes mottling in soils that are not well drained.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments; for example, slope alluvium.

Beach ridge. A low, essentially continuous mound of beach or beach and dune material heaped up by the action of waves and currents on the backshore of a beach, beyond the present limit of storm waves, and occurring singly or as one of a series of approximately parallel deposits. These ridges define the limits of relict lakes.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Borrow pit. An open excavation from which soil and underlying material have been removed, usually for construction purposes. Typically less than 2 acres in size. Larger areas are mapped as Udorthents.

Bottom land. The normal flood plain of a stream, subject to flooding.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliquivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and is without a natural outlet for surface drainage.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility.

Compaction. Any process by which the mineral grains of soil are rearranged to decrease void space and bring them into closer contact with one another, thereby increasing the weight of solid material per cubic foot. In agronomy, usually associated with machinery traffic across the soil during farming operations.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation

cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour. An imaginary line on the surface of the Earth connecting points of the same elevation.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat). Fecal material deposited in water by aquatic organisms.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropland. Land used primarily for the production of adapted cultivated, close-growing crops or fruit or nut crops for harvest, alone or in association with sod crops.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense material. A very firm, massive, noncemented, root-restrictive layer (commonly till) that has no cracks or in which the spacing of cracks that roots can enter is 10 centimeters or more. The materials within the survey area typically have a bulk density of more than 1.8 grams per cubic centimeter.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Disintegration moraine. A drift topography characterized by chaotic mounds and pits, generally randomly oriented, developed in drift by collapse and flow as the underlying stagnant glacial ice melted. There are used and unused stream courses and lake depressions interspersed with morainic ridges. Consequently, there will be rapid or abrupt changes between materials of different lithology.

Dolostone. A term used for the sedimentary rock dolomite in order to avoid confusion with the mineral of the same name. A carbonate sedimentary rock consisting mostly (more than 50 percent by weight) of the mineral dolomite [$CaMg(CO_3)_2$].

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Drift. Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Effervescence. The gaseous response (observed as bubbles) of soil to applied hydrochloric acid, hydrogen peroxide, or other chemicals. A field or laboratory test to determine the presence of carbonates in the soil.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

End moraine. A moraine produced at the front of an actively flowing glacier at any given time.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous cliff or relatively steep slope, generally produced by erosion or faulting, breaking the general continuity of more gently sloping land surfaces. Exposed nonbedrock material is nonsoil material or very shallow, poorly developed soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, the footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial

meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravel pit. An open excavation from which soil and the loose underlying material have been removed and used as a source of sand or gravel, usually for construction purposes.

Gravelly spot. An area in which the surface layer has more than 35 percent, by volume, rock fragments (mostly less than 3 inches in diameter) in an area of surrounding soil that has less than 15 percent rock fragments.

Ground moraine. An extensive, fairly even layer of till that has an uneven, undulating surface; a deposit of rock and mineral debris dragged along, in, on, and beneath a glacier and emplaced by processes including basal lodgment and release from downwasting stagnant ice by ablation.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are

not considered but are separate factors in predicting runoff.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Knoll. A small, low, rounded hill rising above adjacent landforms.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain, relict. A nearly level surface marking the floor of an extinct lake filled in either by well sorted stratified sediments or by the reworking of existing sediments as a result of water action.

Lamella. An illuvial horizon less than 7.5 centimeters thick. A lamella contains an accumulation of oriented silicate clay on or bridging sand and silt grains (and rock fragments if they occur) and has more silicate clay than the overlying eluvial horizon.

Landfill. An area where waste products of human habitation are disposed. These products can be above or below natural ground level.

Leaching. The removal of soluble material from soil or other material by percolating water.

Lime pit. An open excavation from which soil and underlying material have been removed and then the pit refilled with alkaline material.

Limestone. A sedimentary rock composed of calcium carbonate. There are many impure varieties.

Linear extensibility. Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^1/_3$- or $^1/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Lithic contact. A boundary between soil and continuous, coherent underlying material. The underlying material must be sufficiently coherent to make hand digging with a spade impractical.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Longshore bar. A narrow, elongated, coarse textured ridge that once rose near to, or barely above, a pluvial or glacial lake and extended generally parallel to the shore but was separated from it by an intervening trough or lagoon; both the bar and lagoon are now relict features.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Marsh. A water-saturated, very poorly drained area, intermittently or permanently covered by water. Marsh areas dominantly support sedges, cattails, and rushes.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Monadnock. An isolated hill of resistant rock rising conspicuously above the general level of a lower landform in a temperate climate, representing an isolated remnant of a former erosion cycle in an area that has been largely beveled to its base level.

Moraine. An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Muck spot. An area in closed depressions with overwash and a thin layer of organic material underlain by lacustrine sediments.

Mulch. Any material, such as straw, sawdust, leaves, plastic film, or loose soil, that is spread upon the surface of the soil to protect the soil and plant roots from the effects of raindrops, soil crusting, freezing, and evaporation.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

No-till farming. A method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the intended depth, which typically involves opening a small slit or punching a hole into the soil. There is usually no cultivation during crop production. Chemical weed control is normally used.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paralithic contact. Similar to a lithic contact, except that underlying material is softer and can be dug with difficulty with a spade.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Pebbles. Rounded or partially rounded rock or mineral fragments between 2 and 75 mm in diameter.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Perennial water. A natural or constructed lake, pool, pit, or stream course that contains water for most of the year.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quarry. An open excavation from which bedrock has been removed.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the Earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rise. A geomorphic component of flat plains (e.g., lake plain, low coastal plain, low-gradient till plain) consisting of a slightly elevated but low, broad area with low slope gradients (i.e., 1 to 3 percent); typically a microfeature but can be fairly extensive. Commonly, soils on a rise are better drained than those in the surrounding flat area.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. An exposure of base bedrock, typically hard rock, at the surface of the Earth.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy spot. An area where the surface layer of a soil is sandy (usually loamy sand or sand) but the surrounding soil or soils have a loamy or clayey surface layer.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope. A narrow area in which the soil has slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar components. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling

clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Level	0 to 1 percent
Nearly level	0 to 2 or 0 to 3 percent
Gently sloping	2 to 6 percent
Strongly sloping	6 to 12 percent
Moderately steep	12 to 25 percent
Steep	25 to 50 percent

Soil. A natural, three-dimensional body at the Earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area. An area where earth materials, either smoothed or uneven, are deposited or dumped during mining, quarrying, dredging, or excavating activities.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. The loss in volume that occurs in muck soils when they oxidize or dry.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Swamp. A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Swamps are dominantly vegetated by trees and shrubs.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay*

loam, silty clay loam, sandy clay, silty clay, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Till. Unsorted, nonstratified drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Till plain. An extensive area of nearly level to undulating soils underlain by till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Typical pedon. The site of the pedon described as typical for the series in the survey area.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Varve. A thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the Earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot. An area of soil that is somewhat poorly drained to very poorly drained and that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Data recorded in the period 1961-90 at Findlay, Ohio.)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snow-fall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January--	30.7	15.9	23.3	58	-14	1	1.90	0.91	2.76	5	8.4
February-	34.2	18.4	26.3	61	-8	1	1.89	0.89	2.76	5	7.1
March----	46.2	28.2	37.2	77	2	27	2.89	1.72	3.94	7	3.7
April----	59.0	38.2	48.6	84	18	101	3.21	1.82	4.44	7	1.1
May------	70.7	49.1	59.9	90	30	323	3.80	2.60	4.90	7	0.1
June-----	79.9	58.4	69.2	95	42	575	3.83	2.17	5.29	6	0.0
July-----	83.4	62.4	72.9	97	48	709	4.16	2.15	5.92	6	0.0
August---	81.0	60.0	70.5	94	44	636	3.85	1.87	5.56	6	0.0
September	74.4	53.4	63.9	91	34	420	2.93	1.49	4.19	5	0.0
October--	62.2	42.0	52.1	83	22	147	2.14	1.17	3.00	5	0.1
November-	48.3	32.7	40.5	73	14	28	2.87	1.48	4.08	7	1.6
December-	35.4	21.7	28.5	63	-6	4	2.82	1.78	3.75	6	6.6
Yearly:											
Average	58.8	40.0	49.4	---	---	---	---	---	---	---	---
Extreme	---	---	---	98	-15	---	---	---	---	---	---
Total--	---	---	---	---	---	2,972	36.29	20.05	50.59	72	28.7

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Data recorded in the period 1961-90 at Findlay, Ohio.)

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 16	Apr. 30	May 15
2 years in 10 later than--	Apr. 12	Apr. 25	May 10
5 years in 10 later than--	Apr. 4	Apr. 16	Apr. 30
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 17	Oct. 9	Sept. 25
2 years in 10 earlier than--	Oct. 23	Oct. 15	Oct. 1
5 years in 10 earlier than--	Nov. 3	Oct. 25	Oct. 12

Table 3.--Growing Season

(Data recorded in the period 1961-90 at Findlay, Ohio.)

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	194	170	138
8 years in 10	200	178	147
5 years in 10	212	192	165
2 years in 10	224	206	182
1 year in 10	231	213	191

Table 4.--Acreage and Proportionate Extent of the Map Units

Map symbol	Soil name	Acres	Percent
AdA	Adrian muck, 0 to 1 percent slopes	957	0.3
AkA	Alvada loam, 0 to 1 percent slopes	2,964	0.9
AmA	Alvada-Urban land complex, 0 to 2 percent slopes	613	0.2
AnA	Aquents, clayey, 0 to 1 percent slopes	513	0.2
ApB	Arkport loamy fine sand, 2 to 6 percent slopes	210	*
ArA	Aurand loam, 0 to 2 percent slopes	3,721	1.1
AsA	Aurand-Urban land complex, 0 to 2 percent slopes	443	0.1
BgA	Biglick-Milton complex, 0 to 2 percent slopes	125	*
BgB	Biglick-Milton complex, 2 to 6 percent slopes	191	*
BnA	Blount loam, 0 to 2 percent slopes	3,305	1.0
BoA	Blount silt loam, 0 to 2 percent slopes	71,211	20.8
BoB	Blount silt loam, 2 to 4 percent slopes	24,566	7.2
BpA	Blount-Houcktown complex, 0 to 3 percent slopes	12,141	3.6
BrA	Blount-Jenera complex, 0 to 3 percent slopes	1,606	0.5
BuA	Blount-Urban land complex, 0 to 2 percent slopes	997	0.3
ChC	Channahon-Biglick complex, 6 to 12 percent slopes	62	*
CoA	Colwood loam, 0 to 1 percent slopes	308	*
CtA	Cygnet loam, 0 to 2 percent slopes	522	0.2
CuA	Cygnet-Urban land complex, 0 to 2 percent slopes	71	*
DbA	Darroch loam, 0 to 2 percent slopes	461	0.1
DeA	Del Rey silt loam, 0 to 2 percent slopes	179	*
DfA	Del Rey-Blount complex, 0 to 3 percent slopes	6,252	1.8
DuB	Dunbridge loamy fine sand, 1 to 4 percent slopes	139	*
EmA	Elliott silt loam, 0 to 2 percent slopes	869	0.3
FbA	Flatrock loam, 0 to 2 percent slopes, occasionally flooded	135	*
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded	508	0.1
FdA	Flatrock silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded	1,465	0.4
FoA	Fox loam, 0 to 2 percent slopes	227	*
FoB	Fox loam, 2 to 6 percent slopes	1,411	0.4
FoC2	Fox loam, 6 to 12 percent slopes, eroded	60	*
FsA	Fulton silt loam, 0 to 2 percent slopes	163	*
FtA	Fulton silt loam, till substratum, 0 to 2 percent slopes	123	*
GaB	Gallman loam, 2 to 6 percent slopes	164	*
GfA	Gilford mucky loam, 0 to 1 percent slopes	486	0.1
GmA	Glynwood loam, limestone substratum, 0 to 2 percent slopes	136	*
GnB	Glynwood silt loam, 2 to 6 percent slopes	9,634	2.8
GpB2	Glynwood silty clay loam, 2 to 6 percent slopes, eroded	1,090	0.3
GpC2	Glynwood silty clay loam, 6 to 12 percent slopes, eroded	1,210	0.4
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes	15,700	4.6
GuB	Glynwood-Urban land complex, 2 to 6 percent slopes	958	0.3
HaA	Harrod silt loam, 0 to 1 percent slopes, frequently flooded	484	0.1
HkA	Haskins fine sandy loam, 0 to 2 percent slopes	83	*
HnA	Haskins loam, 0 to 2 percent slopes	1,310	0.4
HpA	Houcktown loam, 0 to 2 percent slopes	301	*
HpB	Houcktown loam, 2 to 6 percent slopes	2,995	0.9
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes	1,941	0.6
HsA	Hoytville silty clay loam, 0 to 1 percent slopes	1,885	0.6
HtA	Hoytville silty clay, 0 to 1 percent slopes	23,347	6.8
JeA	Jenera fine sandy loam, 0 to 2 percent slopes	1,182	0.3
JeB	Jenera fine sandy loam, 2 to 6 percent slopes	634	0.2
JfB	Jenera-Shinrock, till substratum, complex, 1 to 4 percent slopes	2,042	0.6
JoA	Joliet loam, 0 to 1 percent slopes	175	*
KnA	Knoxdale silt loam, 0 to 2 percent slopes, occasionally flooded	224	*
LbA	Lamberjack loam, 0 to 2 percent slopes	1,142	0.3
LcA	Lamberjack-Urban land complex, 0 to 2 percent slopes	1,850	0.5
LuB2	Lucas silty clay loam, 2 to 6 percent slopes, eroded	47	*
LyE	Lybrand silt loam, 18 to 50 percent slopes	288	*
MbA	Medway silt loam, 0 to 2 percent slopes, occasionally flooded	726	0.2
McA	Medway silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded	1,417	0.4
MeA	Mermill loam, 0 to 1 percent slopes	1,507	0.4
MfA	Mermill clay loam, 0 to 1 percent slopes	895	0.3

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Map Units--Continued

Map symbol	Soil name	Acres	Percent
MgA	Millsdale silty clay loam, 0 to 1 percent slopes	2,553	0.7
MnA	Milton silt loam, 0 to 2 percent slopes	652	0.2
MpD3	Morley clay loam, 12 to 18 percent slopes, severely eroded	242	*
MrA	Morley loam, limestone substratum, 0 to 2 percent slopes	450	0.1
MsB	Morley, limestone substratum-Milton complex, 2 to 6 percent slopes	607	0.2
MvB	Mortimer silt loam, 2 to 6 percent slopes	1,459	0.4
MwB2	Mortimer silty clay loam, 2 to 6 percent slopes, eroded	79	*
NnA	Nappanee loam, 0 to 2 percent slopes	943	0.3
NnB	Nappanee loam, 2 to 6 percent slopes	44	*
NpA	Nappanee silty clay loam, 0 to 2 percent slopes	2,333	0.7
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded	241	*
NrA	Nappanee-Urban land complex, 0 to 2 percent slopes	81	*
OrA	Oshtemo fine sandy loam, 0 to 2 percent slopes	495	0.1
OrB	Oshtemo fine sandy loam, 2 to 6 percent slopes	566	0.2
OrC	Oshtemo fine sandy loam, 6 to 12 percent slopes	52	*
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes	818	0.2
OwB	Ottokee loamy fine sand, 0 to 6 percent slopes	199	*
PbA	Patton silty clay loam, 0 to 1 percent slopes	364	0.1
PmA	Pewamo silty clay loam, 0 to 1 percent slopes	83,197	24.4
PnA	Pewamo-Urban land complex, 0 to 2 percent slopes	743	0.2
Pt	Pits, quarry	286	*
RcA	Randolph silt loam, 0 to 2 percent slopes	1,086	0.3
RgB	Rawson sandy loam, 2 to 6 percent slopes	117	*
RhA	Rensselaer loam, till substratum, 0 to 1 percent slopes	5,090	1.5
RnA	Rimer loamy sand, 0 to 2 percent slopes	99	*
RoA	Rimer loamy fine sand, deep phase, 0 to 2 percent slopes	216	*
RtA	Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded	917	0.3
SeA	Shawtown loam, 0 to 2 percent slopes	778	0.2
SeB	Shawtown loam, 2 to 6 percent slopes	2,072	0.6
SfB	Shinrock silt loam, 2 to 6 percent slopes	129	*
SgC2	Shinrock silty clay loam, 6 to 12 percent slopes, eroded	107	*
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes	2,918	0.9
SmA	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded	857	0.3
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded	705	0.2
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded	2,924	0.9
SpA	Sloan silty clay loam, limestone substratum, 0 to 1 percent slopes, occasionally flooded	2,926	0.9
StB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded	400	0.1
StC2	St. Clair silty clay loam, 6 to 12 percent slopes, eroded	379	0.1
ThA	Thackery loam, till substratum, 0 to 2 percent slopes	1,172	0.3
TkA	Tiderishi loam, 0 to 2 percent slopes	2,303	0.7
TnA	Toledo silty clay loam, 0 to 1 percent slopes	74	*
ToB	Tuscola loamy fine sand, 2 to 6 percent slopes	306	*
TpA	Tuscola fine sandy loam, 0 to 2 percent slopes	637	0.2
TpB	Tuscola fine sandy loam, 2 to 6 percent slopes	303	*
TuB	Tuscola silt loam, 2 to 6 percent slopes	154	*
UcA	Udorthents, loamy, 0 to 2 percent slopes	984	0.3
UcD	Udorthents, loamy, 2 to 25 percent slopes	453	0.1
Ur	Urban land	786	0.2
VaA	Vanlue loam, 0 to 2 percent slopes	1,682	0.5
VeA	Vaughnsville loam, 0 to 3 percent slopes	197	*
W	Water	2,088	0.6
WeA	Westland-Rensselaer complex, 0 to 1 percent slopes	1,927	0.6
	Total	341,561	100.0

* Less than 0.05 percent. The combined extent of the soils assigned an asterisk in the “Percent” column is about 1.8 percent of the survey area.

Table 5.--Cropland Limitations and Hazards

(See text for a description of the limitations and hazards listed in this table. Only soils suitable for cultivated crops are listed in this table.)

Soil name and map symbol	Cropland limitations and hazards
AdA:	
Adrian	Ponding High potential for ground-water pollution Frost action Subsidence of the muck Wind erosion Sandy layers
AkA:	
Alvada	Ponding Frost action
ApB:	
Arkport	Erosion hazard Wind erosion Limited available water capacity Sandy layers
ArA:	
Aurand	Seasonal high water table Frost action
BgA:	
Biglick	Depth to bedrock High potential for ground-water pollution Limited available water capacity High clay content
Milton	Depth to bedrock High potential for ground-water pollution Limited available water capacity High clay content
BgB:	
Biglick	Depth to bedrock High potential for ground-water pollution Erosion hazard Limited available water capacity High clay content
Milton	Depth to bedrock High potential for ground-water pollution Erosion hazard Limited available water capacity High clay content
BnA:	
Blount	Seasonal high water table Frost action High clay content
BoA:	
Blount	Seasonal high water table Surface compaction Frost action Surface crusting High clay content

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
BoB:	
Blount	Seasonal high water table Surface compaction Frost action Surface crusting Erosion hazard High clay content
BpA:	
Blount	Seasonal high water table Frost action High clay content
Houcktown	Seasonal high water table Frost action
BrA:	
Blount	Seasonal high water table Frost action High clay content
Jenera	Seasonal high water table Frost action Wind erosion
ChC:	
Channahon	Depth to bedrock High potential for ground-water pollution Easily eroded Erosion hazard Limited available water capacity
Biglick	Depth to bedrock High potential for ground-water pollution Easily eroded Erosion hazard Limited available water capacity High clay content
CoA:	
Colwood	Ponding Moderate potential for ground-water pollution Frost action
CtA:	
Cygnet	Seasonal high water table Frost action
DbA:	
Darroch	Seasonal high water table Moderate potential for ground-water pollution Frost action
DeA:	
Del Rey	Seasonal high water table Surface compaction Frost action Surface crusting High clay content

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
DfA:	
Del Rey	Seasonal high water table Surface compaction Frost action Surface crusting High clay content
Blount	Seasonal high water table Surface compaction Frost action Surface crusting High clay content
DuB:	
Dunbridge	Depth to bedrock High potential for ground-water pollution Erosion hazard Wind erosion Limited available water capacity
EmA:	
Elliott	Seasonal high water table Surface compaction Frost action High clay content
FbA:	
Flatrock	Occasional flooding Seasonal high water table Moderate potential for ground-water pollution Frost action
FcA:	
Flatrock	Occasional flooding Seasonal high water table Surface compaction Moderate potential for ground-water pollution Frost action Surface crusting
FdA:	
Flatrock	Occasional flooding Seasonal high water table Surface compaction Moderate potential for ground-water pollution Frost action Surface crusting
FoA:	
Fox	High potential for ground-water pollution Limited available water capacity
FoB:	
Fox	High potential for ground-water pollution Erosion hazard
FoC2:	
Fox	Part of the surface layer removed by erosion High potential for ground-water pollution Fair tilth Easily eroded Erosion hazard Limited available water capacity

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
FsA:	
Fulton	Seasonal high water table Surface compaction Frost action Surface crusting High clay content
FtA:	
Fulton	Seasonal high water table Surface compaction Frost action Surface crusting High clay content
GaB:	
Gallman	Erosion hazard
GfA:	
Gilford	Ponding High potential for ground-water pollution Frost action Wind erosion
GmA:	
Glynwood	Seasonal high water table Frost action High clay content
GnB:	
Glynwood	Seasonal high water table Surface compaction Frost action Surface crusting Erosion hazard High clay content
GpB2:	
Glynwood	Part of the surface layer removed by erosion Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Erosion hazard Clodding High clay content
GpC2:	
Glynwood	Part of the surface layer removed by erosion Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Easily eroded Erosion hazard Clodding High clay content

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
GsB:	
Glynwood	Seasonal high water table Surface compaction Frost action Fair tilth Erosion hazard Clodding High clay content
Blount	Seasonal high water table Frost action High clay content
Houcktown	Seasonal high water table Frost action Erosion hazard
HaA:	
Harrod	Frequent flooding Seasonal high water table Surface compaction Depth to bedrock High potential for ground-water pollution Frost action
HkA:	
Haskins	Seasonal high water table Frost action Wind erosion Restricted permeability
HnA:	
Haskins	Seasonal high water table Frost action Restricted permeability
HpA:	
Houcktown	Seasonal high water table Frost action
HpB:	
Houcktown	Seasonal high water table Frost action Erosion hazard
HrB:	
Houcktown	Seasonal high water table Frost action Erosion hazard Limited available water capacity
Glynwood	Seasonal high water table Surface compaction Frost action Fair tilth Erosion hazard Clodding High clay content
Jenera	Seasonal high water table Frost action Erosion hazard Wind erosion

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
HsA:	
Hoytville	Ponding Surface compaction Frost action Fair tilth Clodding High clay content
HtA:	
Hoytville	Ponding Surface compaction Poor tilth Frost action Clodding High clay content
JeA:	
Jenera	Seasonal high water table Frost action Wind erosion
JeB:	
Jenera	Seasonal high water table Frost action Erosion hazard Wind erosion
JfB:	
Jenera	Seasonal high water table Frost action Erosion hazard Wind erosion
Shinrock	Seasonal high water table Surface compaction Frost action Surface crusting Erosion hazard High clay content
JoA:	
Joliet	Seasonal high water table Depth to bedrock High potential for ground-water pollution Frost action Limited available water capacity
KnA:	
Knoxdale	Occasional flooding Surface compaction Surface crusting
LbA:	
Lamberjack	Seasonal high water table Frost action
LuB2:	
Lucas	Part of the surface layer removed by erosion Surface compaction Fair tilth Surface crusting Erosion hazard Clodding High clay content

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
MbA:	
Medway	Occasional flooding Seasonal high water table Surface compaction Moderate potential for ground-water pollution Frost action
McA:	
Medway	Occasional flooding Seasonal high water table Surface compaction Moderate potential for ground-water pollution Frost action
MeA:	
Mermill	Ponding Frost action Restricted permeability
MfA:	
Mermill	Ponding Surface compaction Frost action Fair tilth Restricted permeability
MgA:	
Millsdale	Ponding Surface compaction Depth to bedrock High potential for ground-water pollution Frost action Fair tilth Limited available water capacity High clay content
MnA:	
Milton	Surface compaction Depth to bedrock High potential for ground-water pollution Surface crusting Limited available water capacity High clay content
MpD3:	
Morley	Most of the surface layer removed by erosion Surface compaction Fair tilth Easily eroded Erosion hazard Limited available water capacity Clodding Root-restrictive layer High clay content
MrA:	
Morley	No limitations or hazards
MsB:	
Morley	Erosion hazard

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
MsB:	
Milton	Surface compaction Depth to bedrock High potential for ground-water pollution Surface crusting Erosion hazard Limited available water capacity High clay content
MvB:	
Mortimer	Seasonal high water table Surface compaction Frost action Surface crusting Erosion hazard High clay content
MwB2:	
Mortimer	Part of the surface layer removed by erosion Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Erosion hazard Clodding High clay content
NnA:	
Nappanee	Seasonal high water table Frost action High clay content
NnB:	
Nappanee	Seasonal high water table Frost action Erosion hazard Limited available water capacity High clay content
NpA:	
Nappanee	Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Clodding High clay content
NpB2:	
Nappanee	Part of the surface layer removed by erosion Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Erosion hazard Limited available water capacity Clodding High clay content
OrA:	
Oshtemo	High potential for ground-water pollution Wind erosion

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
OrB:	
Oshtemo	High potential for ground-water pollution Erosion hazard Wind erosion Limited available water capacity
OrC:	
Oshtemo	High potential for ground-water pollution Easily eroded Erosion hazard Wind erosion
OsB:	
Oshtemo	Erosion hazard Wind erosion
OwB:	
Ottokee	High potential for ground-water pollution Erosion hazard Wind erosion Limited available water capacity Sandy layers
PbA:	
Patton	Ponding Surface compaction Moderate potential for ground-water pollution Frost action Fair tilth
PmA:	
Pewamo	Ponding Surface compaction Moderate potential for ground-water pollution Frost action Fair tilth Clodding High clay content
RcA:	
Randolph	Seasonal high water table Surface compaction Depth to bedrock High potential for ground-water pollution Frost action Surface crusting Limited available water capacity High clay content
RgB:	
Rawson	Erosion hazard Wind erosion Limited available water capacity
RhA:	
Rensselaer	Ponding Frost action
RnA:	
Rimer	Seasonal high water table Frost action Wind erosion Limited available water capacity Sandy layers

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
RoA:	
Rimer	Seasonal high water table High potential for ground-water pollution Frost action Wind erosion Sandy layers
RtA:	
Rossburg	Occasional flooding Surface compaction
SeA:	
Shawtown	No limitations or hazards
SeB:	
Shawtown	Erosion hazard
SfB:	
Shinrock	Seasonal high water table Surface compaction Frost action Surface crusting Erosion hazard High clay content
SgC2:	
Shinrock	Part of the surface layer removed by erosion Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Easily eroded Erosion hazard Clodding High clay content
SkB:	
Shinrock	Seasonal high water table Surface compaction Frost action Surface crusting Erosion hazard High clay content
Glynwood	Seasonal high water table Surface compaction Frost action Fair tilth Surface crusting Erosion hazard Limited available water capacity Restricted permeability Clodding High clay content
SmA:	
Shoals	Occasional flooding Seasonal high water table Surface compaction Moderate potential for ground-water pollution Frost action Surface crusting

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
SnA:	
Sloan	Occasional flooding Ponding Moderate potential for ground-water pollution Frost action
SoA:	
Sloan	Occasional flooding Ponding Surface compaction Moderate potential for ground-water pollution Frost action Fair tilth
SpA:	
Sloan	Occasional flooding Ponding Surface compaction Moderate potential for ground-water pollution Frost action Fair tilth
StB2:	
St. Clair	Part of the surface layer removed by erosion Surface compaction Fair tilth Surface crusting Erosion hazard Limited available water capacity Clodding High clay content
StC2:	
St. Clair	Part of the surface layer removed by erosion Surface compaction Fair tilth Surface crusting Easily eroded Erosion hazard Limited available water capacity Clodding High clay content
ThA:	
Thackery	Seasonal high water table High potential for ground-water pollution Frost action
TkA:	
Tiderishi	Seasonal high water table Frost action
TnA:	
Toledo	Ponding Surface compaction Moderate potential for ground-water pollution Frost action Fair tilth Clodding High clay content

Table 5.--Cropland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards
ToB:	
Tuscola	Moderate potential for ground-water pollution Frost action Erosion hazard Wind erosion
TpA:	
Tuscola	Moderate potential for ground-water pollution Frost action Wind erosion
TpB:	
Tuscola	Moderate potential for ground-water pollution Frost action Erosion hazard Wind erosion
TuB:	
Tuscola	Surface compaction Moderate potential for ground-water pollution Frost action Surface crusting Erosion hazard
VaA:	
Vanlue	Seasonal high water table Frost action
VeA:	
Vaughnsville	No limitations or hazards
WeA:	
Westland	Ponding High potential for ground-water pollution Frost action
Rensselaer	Ponding Moderate potential for ground-water pollution Frost action

Table 6.--Capability Classes and Subclasses

Capability class	Capability subclass	Acreage
Unclassified	---	10,866
1	---	5,375
2	e	65,903
2	w	234,313
2	s	879
3	e	5,075
3	w	14,800
3	s	958
4	e	1,730
4	w	1,132
6	e	530

Table 7.--Crop Yield Index

(This table is based on yields from the years 1992-2000. Estimated yields for soils with a yield index of 100 are corn, 192 bushels; soybeans, 60 bushels; and wheat, 92 bushels. Refer to the "Crop Yield Index" section in the text for more information on how this table was developed and for instructions on converting yield index numbers to estimated yields.)

Map symbol and soil name	Corn yield index	Soybean yield index	Wheat yield index
AdA:			
Adrian-----------	76	76	---
AkA:			
Alvada-----------	87	94	82
AmA:			
Alvada-Urban land	---	---	---
ApB:			
Arkport----------	68	58	72
ArA:			
Aurand-----------	87	84	84
AsA:			
Aurand-Urban land	---	---	---
BgA:			
Biglick-Milton---	53	56	55
BgB:			
Biglick-Milton---	52	51	55
BnA:			
Blount-----------	74	73	75
BoA:			
Blount-----------	74	73	75
BoB:			
Blount-----------	71	67	72
BpA:			
Blount-Houcktown-	75	74	75
BrA:			
Blount-Jenera----	75	76	76
BuA:			
Blount-Urban land	---	---	---
ChC:			
Channahon-Biglick	42	44	49
CoA:			
Colwood----------	100	100	100
CtA:			
Cygnet-----------	81	82	75
CuA:			
Cygnet-Urban land	---	---	---
DbA:			
Darroch----------	90	91	84

Table 7.--Crop Yield Index--Continued

Map symbol and soil name	Corn yield index	Soybean yield index	Wheat yield index
DeA:			
Del Rey	74	73	75
DfA:			
Del Rey-Blount	74	73	75
DuB:			
Dunbridge	58	54	54
EmA:			
Elliott	87	82	82
FbA:			
Flatrock	74	80	72
FcA:			
Flatrock	74	76	67
FdA:			
Flatrock	74	76	67
FoA:			
Fox	68	67	67
FoB:			
Fox	68	64	67
FoC2:			
Fox	58	53	52
FsA:			
Fulton	71	69	69
FtA:			
Fulton	71	69	69
GaB:			
Gallman	71	64	67
GfA:			
Gilford	84	76	82
GmA:			
Glynwood	74	78	75
GnB:			
Glynwood	68	64	67
GpB2:			
Glynwood	61	58	54
GpC2:			
Glynwood	58	54	52
GsB:			
Glynwood-Blount-Houcktown	67	65	72
GuB:			
Glynwood-Urban land	---	---	---
HaA:			
Harrod	64	73	---

Table 7.--Crop Yield Index--Continued

Map symbol and soil name	Corn yield index	Soybean yield index	Wheat yield index
HkA:			
Haskins----------	71	76	66
HnA:			
Haskins----------	74	80	69
HpA:			
Houcktown--------	77	80	75
HpB:			
Houcktown--------	74	73	75
HrB:			
Houcktown-Glynwood-Jenera-	72	69	72
HsA:			
Hoytville--------	87	87	78
HtA:			
Hoytville--------	84	87	78
JeA:			
Jenera-----------	77	82	79
JeB:			
Jenera-----------	74	69	75
JfB:			
Jenera-Shinrock--	72	67	72
JoA:			
Joliet-----------	52	54	55
KnA:			
Knoxdale---------	77	76	67
LbA:			
Lamberjack-------	77	82	75
LcA:			
Lamberjack-Urban land------------	---	---	---
LuB2:			
Lucas------------	61	58	57
LyE:			
Lybrand----------	---	---	---
MbA:			
Medway-----------	77	82	69
McA:			
Medway-----------	77	82	69
MeA:			
Mermill----------	90	85	84
MfA:			
Mermill----------	90	85	84
MgA:			
Millsdale--------	74	76	67

Table 7.--Crop Yield Index--Continued

Map symbol and soil name	Corn yield index	Soybean yield index	Wheat yield index
MnA:			
Milton	64	64	60
MpD3:			
Morley	---	---	---
MrA:			
Morley	74	78	75
MsB:			
Morley-Milton	62	64	64
MvB:			
Mortimer	68	64	67
MwB2:			
Mortimer	61	60	60
NnA:			
Nappanee	71	73	75
NnB:			
Nappanee	64	67	67
NpA:			
Nappanee	71	73	75
NpB2:			
Nappanee	61	64	63
NrA:			
Nappanee-Urban land	---	---	---
OrA:			
Oshtemo	64	62	72
OrB:			
Oshtemo	61	54	67
OrC:			
Oshtemo	58	53	63
OsB:			
Oshtemo	61	54	67
OwB:			
Ottokee	61	58	60
PbA:			
Patton	94	91	85
PmA:			
Pewamo	90	80	82
PnA:			
Pewamo-Urban land	---	---	---
RcA:			
Randolph	71	64	63
RgB:			
Rawson	71	73	72

Table 7.--Crop Yield Index--Continued

Map symbol and soil name	Corn yield index	Soybean yield index	Wheat yield index
RhA:			
Rensselaer-------	100	100	97
RnA:			
Rimer------------	68	69	67
RoA:			
Rimer------------	68	73	67
RtA:			
Rossburg---------	77	76	75
SeA:			
Shawtown---------	81	76	72
SeB:			
Shawtown---------	74	69	67
SfB:			
Shinrock---------	71	69	67
SgC2:			
Shinrock---------	61	54	57
SkB:			
Shinrock-Glynwood	68	64	63
SmA:			
Shoals-----------	74	73	67
SnA:			
Sloan------------	74	73	63
SoA:			
Sloan------------	74	73	63
SpA:			
Sloan------------	74	69	60
StB2:			
St. Clair--------	58	54	60
StC2:			
St. Clair--------	52	47	52
ThA:			
Thackery---------	81	80	69
TkA:			
Tiderishi--------	90	91	84
TnA:			
Toledo-----------	77	76	72
ToB:			
Tuscola----------	68	64	67
TpA:			
Tuscola----------	81	80	79
TpB:			
Tuscola----------	77	69	75

Table 7.--Crop Yield Index--Continued

Map symbol and soil name	Corn yield index	Soybean yield index	Wheat yield index
TuB:			
Tuscola----------	77	69	75
VaA:			
Vanlue-----------	74	76	82
VeA:			
Vaughnsville-----	77	80	72
WeA:			
Westland-Rensselaer------	98	94	92

Table 8.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Soil name
AkA	Alvada loam, 0 to 1 percent slopes (if drained)
ApB	Arkport loamy fine sand, 2 to 6 percent slopes
ArA	Aurand loam, 0 to 2 percent slopes (if drained)
BnA	Blount loam, 0 to 2 percent slopes (if drained)
BoA	Blount silt loam, 0 to 2 percent slopes (if drained)
BoB	Blount silt loam, 2 to 4 percent slopes (if drained)
BpA	Blount-Houcktown complex, 0 to 3 percent slopes (if drained)
BrA	Blount-Jenera complex, 0 to 3 percent slopes (if drained)
CoA	Colwood loam, 0 to 1 percent slopes (if drained)
CtA	Cygnet loam, 0 to 2 percent slopes
DbA	Darroch loam, 0 to 2 percent slopes (if drained)
DeA	Del Rey silt loam, 0 to 2 percent slopes (if drained)
DfA	Del Rey-Blount complex, 0 to 3 percent slopes (if drained)
DuB	Dunbridge loamy fine sand, 1 to 4 percent slopes
EmA	Elliott silt loam, 0 to 2 percent slopes (if drained)
FbA	Flatrock loam, 0 to 2 percent slopes, occasionally flooded
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FdA	Flatrock silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded
FoA	Fox loam, 0 to 2 percent slopes
FoB	Fox loam, 2 to 6 percent slopes
FsA	Fulton silt loam, 0 to 2 percent slopes (if drained)
FtA	Fulton silt loam, till substratum, 0 to 2 percent slopes (if drained)
GaB	Gallman loam, 2 to 6 percent slopes
GfA	Gilford mucky loam, 0 to 1 percent slopes (if drained)
GmA	Glynwood loam, limestone substratum, 0 to 2 percent slopes
GnB	Glynwood silt loam, 2 to 6 percent slopes
GpB2	Glynwood silty clay loam, 2 to 6 percent slopes, eroded
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes
HaA	Harrod silt loam, 0 to 1 percent slopes, frequently flooded (if protected from flooding or not frequently flooded during the growing season)
HkA	Haskins fine sandy loam, 0 to 2 percent slopes (if drained)
HnA	Haskins loam, 0 to 2 percent slopes (if drained)
HpA	Houcktown loam, 0 to 2 percent slopes
HpB	Houcktown loam, 2 to 6 percent slopes
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes
HsA	Hoytville silty clay loam, 0 to 1 percent slopes (if drained)
HtA	Hoytville silty clay, 0 to 1 percent slopes (if drained)
JeA	Jenera fine sandy loam, 0 to 2 percent slopes
JeB	Jenera fine sandy loam, 2 to 6 percent slopes
JfB	Jenera-Shinrock, till substratum, complex, 1 to 4 percent slopes
KnA	Knoxdale silt loam, 0 to 2 percent slopes, occasionally flooded
LbA	Lamberjack loam, 0 to 2 percent slopes (if drained)
LuB2	Lucas silty clay loam, 2 to 6 percent slopes, eroded
MbA	Medway silt loam, 0 to 2 percent slopes, occasionally flooded
McA	Medway silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded
MeA	Mermill loam, 0 to 1 percent slopes (if drained)
MfA	Mermill clay loam, 0 to 1 percent slopes (if drained)
MgA	Millsdale silty clay loam, 0 to 1 percent slopes (if drained)
MnA	Milton silt loam, 0 to 2 percent slopes
MrA	Morley loam, limestone substratum, 0 to 2 percent slopes
MsB	Morley, limestone substratum-Milton complex, 2 to 6 percent slopes
MvB	Mortimer silt loam, 2 to 6 percent slopes
MwB2	Mortimer silty clay loam, 2 to 6 percent slopes, eroded
NnA	Nappanee loam, 0 to 2 percent slopes (if drained)
NnB	Nappanee loam, 2 to 6 percent slopes (if drained)
NpA	Nappanee silty clay loam, 0 to 2 percent slopes (if drained)
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded (if drained)
OrA	Oshtemo fine sandy loam, 0 to 2 percent slopes
OrB	Oshtemo fine sandy loam, 2 to 6 percent slopes
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes

Table 8.--Prime Farmland--Continued

Map symbol	Soil name
PbA	Patton silty clay loam, 0 to 1 percent slopes (if drained)
PmA	Pewamo silty clay loam, 0 to 1 percent slopes (if drained)
RcA	Randolph silt loam, 0 to 2 percent slopes (if drained)
RgB	Rawson sandy loam, 2 to 6 percent slopes
RhA	Rensselaer loam, till substratum, 0 to 1 percent slopes (if drained)
RnA	Rimer loamy sand, 0 to 2 percent slopes (if drained)
RoA	Rimer loamy fine sand, deep phase, 0 to 2 percent slopes (if drained)
RtA	Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded
SeA	Shawtown loam, 0 to 2 percent slopes
SeB	Shawtown loam, 2 to 6 percent slopes
SfB	Shinrock silt loam, 2 to 6 percent slopes
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes
SmA	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded (if drained)
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded (if drained)
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded (if drained)
SpA	Sloan silty clay loam, limestone substratum, 0 to 1 percent slopes, occasionally flooded (if drained)
StB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded
ThA	Thackery loam, till substratum, 0 to 2 percent slopes
TkA	Tiderishi loam, 0 to 2 percent slopes (if drained)
TnA	Toledo silty clay loam, 0 to 1 percent slopes (if drained)
ToB	Tuscola loamy fine sand, 2 to 6 percent slopes
TpA	Tuscola fine sandy loam, 0 to 2 percent slopes
TpB	Tuscola fine sandy loam, 2 to 6 percent slopes
TuB	Tuscola silt loam, 2 to 6 percent slopes
VaA	Vanlue loam, 0 to 2 percent slopes (if drained)
VeA	Vaughnsville loam, 0 to 3 percent slopes
WeA	Westland-Rensselaer complex, 0 to 1 percent slopes (if drained)

Table 9.--Agricultural Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
AdA:						
Adrian	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Leaching limitation	0.45	Low adsorption	1.00		
AkA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
AmA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
ApB:						
Arkport	Somewhat limited		Somewhat limited		Somewhat limited	
	Too acid	0.08	Too acid	0.31	Too acid	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
					Filtering capacity	0.01
ArA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
Urban land	Not rated		Not rated		Not rated	
BgA:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Runoff limitation	0.40				
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.90	Depth to bedrock	0.90	Depth to bedrock	0.90
	Droughty	0.70	Droughty	0.70	Droughty	0.70
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
BgB:						
Biglick	Very limited		Very limited		Very limited	
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Runoff limitation	0.40			Too steep for surface application	0.08
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
	Droughty	0.58	Droughty	0.58	Droughty	0.58
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
BnA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
BoA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to dense layer	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Restricted permeability	1.00	Too acid	0.07	Too acid	0.07
	Too acid	0.02				

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BoB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
					Too steep for surface application	0.01
BpA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
BrA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
BuA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Urban land	Not rated		Not rated		Not rated	
ChC:						
Channahon	Very limited		Very limited		Very limited	
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Runoff limitation	0.40	Slope	0.04	Too steep for surface application	1.00
	Slope	0.04			Too steep for sprinkler application	0.22

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ChC:						
Biglick	Very limited		Very limited		Very limited	
	Droughty	1.00	Droughty	1.00	Droughty	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Too steep for surface application	1.00
	Runoff limitation	0.40	Slope	0.04	Restricted permeability	0.60
	Slope	0.04			Too steep for sprinkler application	0.22
CoA:						
Colwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtA:						
Cygnet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
CuA:						
Cygnet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DeA:						
Del Rey	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
DfA:						
Del Rey	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
DfA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
DuB:						
Dunbridge	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Droughty	0.96	Droughty	0.96	Droughty	0.96
	Depth to bedrock	0.84	Depth to bedrock	0.84	Depth to bedrock	0.84
					Too steep for surface application	0.01
EmA:						
Elliott	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Shallow to densic materials	0.06	Shallow to densic materials	0.06		
FbA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
FdA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
FoA:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
FoB:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FoC2:						
Fox	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Slope	0.04	Too acid	0.07	Too steep for surface application	1.00
	Too acid	0.02	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.07
FsA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
FtA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
GaB:						
Gallman	Somewhat limited		Somewhat limited		Somewhat limited	
	Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
					Filtering capacity	0.01
GfA:						
Gilford	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GmA:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GnB:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
					Too steep for surface application	0.08
GpB2:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
					Too steep for surface application	0.08
GpC2:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Slope	0.04	Too acid	0.07	Too steep for surface application	1.00
	Too acid	0.02	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.07
GsB:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
					Too steep for surface application	0.01
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
					Too steep for surface application	0.01

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GuB:						
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
					Too steep for surface application	0.08
Urban land	Not rated		Not rated		Not rated	
HaA:						
Harrod	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	0.23	Depth to bedrock	0.23	Depth to bedrock	0.23
HkA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
HnA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
HpA:						
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
HpB:						
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
					Too steep for surface application	0.08

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HrB:						
Houcktown-----------	Very limited		Very limited		Very limited	
	Depth to dense layer	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	0.60	Restricted permeability	0.60
	Restricted permeability	0.74	Droughty	0.06	Droughty	0.06
	Droughty	0.06			Too steep for surface application	0.01
Glynwood------------	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
					Too steep for surface application	0.01
Jenera--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
					Too steep for surface application	0.01
HsA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
HtA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
JeA:						
Jenera--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
JeB:						
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
					Filtering capacity	0.01
JfB:						
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
					Too steep for surface application	0.01
Shinrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
					Too steep for surface application	0.01
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Droughty	0.83	Droughty	0.83	Droughty	0.83
	Runoff limitation	0.40				
KnA:						
Knoxdale	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
LbA:						
Lamberjack	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
LcA:						
Lamberjack	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
LuB2:						
Lucas	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Runoff limitation	0.40	Too acid	0.07	Too steep for surface application	0.08
	Too acid	0.02			Too acid	0.07
LyE:						
Lybrand	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Too steep for surface application	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Too steep for sprinkler application	1.00
	Too acid	0.02	Too acid	0.07	Restricted permeability	1.00
					Too acid	0.07
MbA:						
Medway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
McA:						
Medway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
MgA:						
Millsdale	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Depth to bedrock	0.10	Depth to bedrock	0.10	Depth to bedrock	0.10
	Droughty	0.01	Droughty	0.01	Droughty	0.01

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
MnA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.54	Depth to bedrock	0.54	Depth to bedrock	0.54
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.24	Droughty	0.24	Droughty	0.24
	Too acid	0.02	Too acid	0.07	Too acid	0.07
MpD3:						
Morley	Very limited		Very limited		Very limited	
	Depth to dense layer	1.00	Slope	1.00	Too steep for surface application	1.00
	Slope	1.00	Depth to saturated zone	0.68	Too steep for sprinkler application	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Depth to saturated zone	0.68
	Depth to saturated zone	0.68	Droughty	0.22	Restricted permeability	0.60
	Droughty	0.22	Too acid	0.07	Droughty	0.22
MrA:						
Morley	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.74	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Depth to saturated zone	0.68	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.02	Too acid	0.07	Too acid	0.07
MsB:						
Morley	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.74	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Depth to saturated zone	0.68	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	0.54	Depth to bedrock	0.54	Depth to bedrock	0.54
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Droughty	0.27	Droughty	0.27	Droughty	0.27
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
MvB:						
Mortimer	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too steep for surface application	0.08
	Too acid	0.02			Too acid	0.07

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MwB2:						
Mortimer	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too steep for surface application	0.08
	Too acid	0.02			Too acid	0.07
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too steep for surface application	0.08
	Too acid	0.02	Droughty	0.02	Too acid	0.07
	Droughty	0.02			Droughty	0.02
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Droughty	0.24	Droughty	0.24
	Droughty	0.24	Too acid	0.07	Too steep for surface application	0.08
	Too acid	0.02			Too acid	0.07
NrA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40	Too acid	0.07	Too acid	0.07
	Too acid	0.02				

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
NrA:						
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.11	Too acid	0.42	Too acid	0.42
OrB:						
Oshtemo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.11	Too acid	0.42	Too acid	0.42
					Too steep for surface application	0.08
OrC:						
Oshtemo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.11	Too acid	0.42	Too steep for surface application	1.00
	Slope	0.04	Slope	0.04	Too acid	0.42
					Too steep for sprinkler application	0.22
OsB:						
Oshtemo	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
OwB:						
Ottokee	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Leaching limitation	0.45			Too steep for surface application	0.01
PbA:						
Patton	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PmA:						
Pewamo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
PnA:						
Pewamo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	0.84	Depth to bedrock	0.84	Depth to bedrock	0.84
	Droughty	0.56	Droughty	0.56	Droughty	0.56
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
RgB:						
Rawson	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Droughty	0.20	Too acid	0.31	Too acid	0.31
	Too acid	0.08	Droughty	0.20	Droughty	0.20
	Shallow to densic materials	0.06	Shallow to densic materials	0.06	Too steep for surface application	0.08
RhA:						
Rensselaer	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
RnA:						
Rimer	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Droughty	0.19	Droughty	0.19	Droughty	0.19
	Too acid	0.02	Too acid	0.07	Too acid	0.07

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste: Rating class and limiting features	Value	Application of sewage sludge: Rating class and limiting features	Value	Disposal of wastewater by irrigation: Rating class and limiting features	Value
RoA:						
Rimer	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.02	Too acid	0.07	Too acid	0.07
RtA:						
Rossburg	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Flooding	1.00	Flooding	0.60
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
SeA:						
Shawtown	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
SeB:						
Shawtown	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.68	Depth to saturated zone	0.68
					Too steep for surface application	0.08
SfB:						
Shinrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too steep for surface application	0.08
					Too acid	0.07
SgC2:						
Shinrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Too steep for surface application	1.00
	Slope	0.04	Too acid	0.07	Restricted permeability	0.31
	Too acid	0.02	Slope	0.04	Too steep for sprinkler application	0.22
					Too acid	0.07

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SkB:						
Shinrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.41	Restricted permeability	0.31	Restricted permeability	0.31
	Too acid	0.02	Too acid	0.07	Too acid	0.07
					Too steep for surface application	0.01
Glynwood	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Too acid	0.08	Too acid	0.31	Too acid	0.31
	Shallow to densic materials	0.01	Shallow to densic materials	0.01	Too steep for surface application	0.01
	Droughty	0.01	Droughty	0.01	Droughty	0.01
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	1.00	Flooding	0.60
StB2:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Depth to saturated zone	0.86
	Runoff limitation	0.40			Too steep for surface application	0.08

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
StC2:						
St. Clair	Very limited		Very limited		Very limited	
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Depth to saturated zone	0.86	Depth to saturated zone	0.86	Too steep for surface application	1.00
	Runoff limitation	0.40	Slope	0.04	Depth to saturated zone	0.86
	Slope	0.04	Droughty	0.03	Too steep for sprinkler application	0.22
	Droughty	0.03			Droughty	0.03
ThA:						
Thackery	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too acid	0.02	Too acid	0.07	Too acid	0.07
TkA:						
Tiderishi	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
	Too acid	0.02	Too acid	0.07	Too acid	0.07
TnA:						
Toledo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
	Runoff limitation	0.40				
ToB:						
Tuscola	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
					Filtering capacity	0.01
TpA:						
Tuscola	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01

Table 9.--Agricultural Waste Management--Continued

Map symbol and soil name	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TpB:						
Tuscola-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
					Filtering capacity	0.01
TuB:						
Tuscola-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Too steep for surface application	0.08
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	
UcD:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban Land----------	Not rated		Not rated		Not rated	
VaA:						
Vanlue--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.74	Restricted permeability	0.60	Restricted permeability	0.60
VeA:						
Vaughnsville--------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.74	Depth to saturated zone	0.68	Depth to saturated zone	0.68
	Depth to saturated zone	0.68	Restricted permeability	0.60	Restricted permeability	0.60
WeA:						
Westland------------	Very limited		Very limited		Very limited	
	Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Rensselaer----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 10.--Woodland Productivity

(Only the soils suitable for production of commercial trees are listed.)

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
AdA:				
Adrian	Black willow	---	---	Arborvitae, baldcypress, eastern cottonwood, green ash, red maple, silver maple, white ash.
	Red maple	51	29	
	Silver maple	76	29	
	White ash	51	29	
AkA:				
Alvada	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	85	72	
ApB:				
Arkport	Eastern white pine	85	143	Norway spruce, black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash.
	Red pine	85	172	
	Sugar maple	70	43	
ArA:				
Aurand	Northern red oak	80	57	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	White oak	75	57	
BgA:				
Biglick	Bur oak	---	---	American basswood, eastern redcedar, eastern white pine, northern red oak, shortleaf pine, white oak.
	Eastern redcedar	---	---	
	Northern red oak	50	29	
	White oak	50	29	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
BgA:				
Milton	Black cherry	---	---	American basswood, black walnut, eastern redcedar, eastern white pine, northern red oak, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
BgB:				
Biglick	Bur oak	---	---	American basswood, eastern redcedar, eastern white pine, northern red oak, shortleaf pine, white oak.
	Eastern redcedar	---	---	
	Northern red oak	50	29	
	White oak	50	29	
Milton	Black cherry	---	---	American basswood, black walnut, eastern redcedar, eastern white pine, northern red oak, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
BnA:				
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	
BoA:				
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
BoB:				
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	
BpA:				
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	
Houcktown	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
BrA:				
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	
Jenera	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
ChC:				
Channahon	American basswood	---	---	American basswood, eastern redcedar, eastern white pine, northern red oak, shortleaf pine, white oak.
	Northern red oak	55	43	
	Quaking aspen	---	---	
	Sugar maple	---	---	
	White oak	---	---	
Biglick	Bur oak	---	---	American basswood, eastern redcedar, eastern white pine, northern red oak, shortleaf pine, white oak.
	Eastern redcedar	---	---	
	Northern red oak	50	29	
	White oak	50	29	
CoA:				
Colwood	Pin oak	90	72	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Red maple	---	---	
	Swamp white oak	90	72	
	White ash	---	---	
CtA:				
Cygnet	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	90	72	
DbA:				
Darroch	American basswood	---	---	American sycamore, Norway spruce, black cherry, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	66	57	
	Quaking aspen	---	---	
	Red maple	---	---	
	White ash	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
DeA:				
Del Rey	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Green ash	---	---	
	Northern red oak	70	57	
	White oak	70	57	
DfA:				
Del Rey	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Green ash	---	---	
	Northern red oak	70	57	
	White oak	70	57	
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	
DuB:				
Dunbridge	Black cherry	---	---	American basswood, black walnut, eastern redcedar, eastern white pine, northern red oak, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	75	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	70	57	
EmA:				
Elliott	American basswood	---	---	American sycamore, Norway spruce, black cherry, eastern cottonwood, eastern redcedar, green ash, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	66	57	
	Quaking aspen	---	---	
	Red maple	---	---	
	White ash	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
FbA:				
Flatrock	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	---	---	
	White oak	---	---	
FcA:				
Flatrock	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	---	---	
	White oak	---	---	
FdA:				
Flatrock	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Tuliptree	---	---	
	White oak	---	---	
FoA:				
Fox	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	---	---	
FoB:				
Fox	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	---	---	
FoC2:				
Fox	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
FsA:				
Fulton	American beech	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Black cherry	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
FtA:				
Fulton	American beech	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Black cherry	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
GaB:				
Gallman	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	85	72	
GfA:				
Gilford	Eastern white pine	55	100	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Pin oak	70	57	
	Red maple	60	43	
GmA:				
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
GnB:				
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
GpB2:				
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
GpC2:				
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
GsB:				
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
Blount	Bur oak	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Northern red oak	65	43	
	Pin oak	---	---	
	Sugar maple	---	---	
	White ash	---	---	
	White oak	65	43	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
GsB:				
Houcktown	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HaA:				
Harrod	Green ash	---	---	Norway spruce, black oak, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Pin oak	85	5	
	Red maple	---	---	
	Swamp white oak	---	---	
HkA:				
Haskins	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HnA:				
Haskins	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HpA:				
Houcktown	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
HpB:				
Houcktown	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
HrB:				
Houcktown	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
Jenera	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
HsA:				
Hoytville	Black cherry	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Northern red oak	72	57	
	Pin oak	76	57	
	Red maple	---	---	
	White ash	77	43	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
HtA:				
Hoytville	Black cherry	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Northern red oak	72	57	
	Pin oak	76	57	
	Red maple	---	---	
	White ash	77	43	
JeA:				
Jenera	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
JeB:				
Jenera	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
JfB:				
Jenera	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
Shinrock	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
JoA:				
Joliet	American basswood	---	---	American basswood, eastern redcedar, eastern white pine, northern red oak, shortleaf pine, white oak.
	Northern red oak	55	43	
	Quaking aspen	---	---	
	Sugar maple	---	---	
	White oak	---	---	
KnA:				
Knoxdale	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Tuliptree	100	114	
	White ash	---	---	
	White oak	90	72	
LbA:				
Lamberjack	Black cherry	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Pin oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
LuB2:				
Lucas	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Northern red oak	70	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
LyE:				
Lybrand	Black walnut	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, tuliptree, white oak.
	Bur oak	---	---	
	Northern red oak	80	57	
	Shagbark hickory	---	---	
	Tuliptree	90	86	
	White oak	80	57	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
MbA:				
Medway	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	96	100	
	White ash	---	---	
	White oak	---	---	
McA:				
Medway	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	96	100	
	White ash	---	---	
	White oak	---	---	
MeA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
MfA:				
Mermill	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	---	---	
	Swamp white oak	90	72	
MgA:				
Millsdale	Black cherry	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Eastern cottonwood	---	---	
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
MnA:				
Milton	Black cherry	---	---	American basswood, black walnut, eastern redcedar, eastern white pine, northern red oak, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
MpD3:				
Morley	Black oak	89	72	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Eastern white pine	74	157	
	Tuliptree	105	114	
MrA:				
Morley	Black oak	89	72	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Eastern white pine	74	157	
	Tuliptree	105	114	
MsB:				
Morley	Black oak	89	72	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Eastern white pine	74	157	
	Tuliptree	105	114	
Milton	Black cherry	---	---	American basswood, black walnut, eastern redcedar, eastern white pine, northern red oak, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	95	100	
	White ash	---	---	
	White oak	---	---	
MvB:				
Mortimer	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
MwB2:				
Mortimer	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
NnA:				
Nappanee	American sycamore	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NnB:				
Nappanee	American sycamore	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NpA:				
Nappanee	American sycamore	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	
NpB2:				
Nappanee	American sycamore	---	---	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	72	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
OrA:				
Oshtemo	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
OrB:				
Oshtemo	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
OrC:				
Oshtemo	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
OsB:				
Oshtemo	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	70	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
OwB:				
Ottokee	Bur oak	---	---	Black oak, black walnut, eastern white pine, northern red oak, white ash, white oak.
	Green ash	---	---	
	Northern red oak	70	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	65	43	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Volume of wood fiber*	Trees to manage
PbA:				
Patton	Northern red oak	75	57	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Pin oak	85	72	
	Sweetgum	80	86	
	White oak	75	57	
PmA:				
Pewamo	Eastern cottonwood	98	129	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	90	72	
	Red maple	71	43	
	Swamp white oak	---	---	
	White ash	71	72	
RcA:				
Randolph	Northern red oak	75	57	American sycamore, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak.
	Sugar maple	90	57	
	Tuliptree	85	86	
RgB:				
Rawson	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	75	57	
RhA:				
Rensselaer	Northern red oak	76	57	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Pin oak	86	72	
	Sweetgum	90	100	
	White oak	75	57	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
RnA:				
Rimer	Black oak	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Quaking aspen	---	---	
	Red maple	---	---	
	Slippery elm	---	---	
	White oak	75	57	
RoA:				
Rimer	Black oak	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Bur oak	---	---	
	Green ash	---	---	
	Northern red oak	80	57	
	Quaking aspen	---	---	
	Red maple	---	---	
	Slippery elm	---	---	
	White oak	75	57	
RtA:				
Rossburg	Black cherry	---	---	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	---	---	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	90	72	
SeA:				
Shawtown	American basswood	66	57	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Eastern white pine	85	200	
	White oak	70	57	
SeB:				
Shawtown	American basswood	66	57	Black cherry, black walnut, eastern white pine, northern red oak, sugar maple, tuliptree, white ash, white oak.
	Eastern white pine	85	200	
	White oak	70	57	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
SfB:				
Shinrock	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
SgC2:				
Shinrock	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
SkB:				
Shinrock	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	---	---	
Glynwood	Black cherry	---	---	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Black oak	80	57	
	Northern red oak	80	57	
	Red maple	---	---	
	Slippery elm	---	---	
	White ash	---	---	
	White oak	80	57	
SmA:				
Shoals	Virginia pine	90	129	American sycamore, eastern cottonwood, pin oak, red maple, swamp white oak, sweetgum, tuliptree.
	Eastern cottonwood	---	---	
	Pin oak	90	72	
	Sweetgum	86	100	
	Tuliptree	90	86	
	White ash	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber*	
SnA:				
Sloan	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
SoA:				
Sloan	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
SpA:				
Sloan	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	86	72	
	Red maple	---	---	
	Swamp white oak	---	---	
StB2:				
St. Clair	Northern red oak	66	43	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
StC2:				
St. Clair	Northern red oak	66	43	Austrian pine, black oak, green ash, pin oak, red maple, tuliptree, white ash, white oak.
	Sugar maple	---	---	
	White ash	---	---	
	White oak	62	43	
ThA:				
Thackery	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	90	72	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
TkA:				
Tiderishi	American basswood	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	66	57	
	Quaking aspen	---	---	
	Red maple	---	---	
	White ash	---	---	
TnA:				
Toledo	Eastern cottonwood	---	---	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Green ash	---	---	
	Pin oak	80	57	
	Red maple	---	---	
	Swamp white oak	80	57	
ToB:				
Tuscola	American basswood	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
TpA:				
Tuscola	American basswood	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
TpB:				
Tuscola	American basswood	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	

See footnote at end of table.

Table 10.--Woodland Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber*	Trees to manage
TuB:				
Tuscola	American basswood	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	86	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	---	---	
VaA:				
Vanlue	American basswood	---	---	American sycamore, Norway spruce, black cherry, black oak, eastern cottonwood, eastern redcedar, green ash, northern red oak, pin oak, red maple, silver maple, swamp white oak, tuliptree, white ash, white oak.
	Northern red oak	66	57	
	Quaking aspen	---	---	
	Red maple	---	---	
	White ash	---	---	
VeA:				
Vaughnsville	Black cherry	---	---	Norway spruce, black cherry, black walnut, eastern white pine, green ash, northern red oak, pin oak, tuliptree, white ash, white oak.
	Black walnut	---	---	
	Northern red oak	90	72	
	Sugar maple	---	---	
	Tuliptree	---	---	
	White ash	---	---	
	White oak	90	72	
WeA:				
Westland	Pin oak	85	72	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Sweetgum	90	100	
	White oak	75	57	
Rensselaer	Northern red oak	76	57	American sycamore, Norway spruce, eastern cottonwood, green ash, pin oak, red maple, silver maple, swamp white oak, sweetgum, white ash.
	Pin oak	86	72	
	Sweetgum	90	100	
	White oak	75	57	

* Volume is expressed as cubic feet per acre per year calculated at the age of culmination of the mean annual increment (CMAI); it indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Table 11.--Woodland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
AkA:						
Alvada--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
AmA:						
Alvada--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Urban land----------	Not rated		Not rated		Not rated	
AnA:						
Aquents-------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ApB:						
Arkport-------------	Slight		Low		Moderate	
	Water erosion	0.08			Low strength	0.50
ArA:						
Aurand--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
AsA:						
Aurand--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Urban land----------	Not rated		Not rated		Not rated	
BgA:						
Biglick-------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
Milton--------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
BgB:						
Biglick-------------	Slight		Low		Severe	
	Water erosion	0.08			Low strength	1.00
Milton--------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
BnA:						
Blount--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
BoA:						
Blount--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
BoB:						
Blount--------------	Slight		High		Severe	
	Water erosion	0.07	Wetness	1.00	Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
BpA:						
Blount	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
Houcktown	Slight		Low		Severe	
	Water erosion	0.05			Low strength	1.00
BrA:						
Blount	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
Jenera	Slight		Low		Moderate	
	Water erosion	0.04			Low strength	0.50
BuA:						
Blount	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Urban land	Not rated		Not rated		Not rated	
ChC:						
Channahon	Slight		Low		Severe	
	Water erosion	0.18			Low strength	1.00
Biglick	Slight		Low		Severe	
	Water erosion	0.18			Low strength	1.00
CoA:						
Colwood	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
CtA:						
Cygnet	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
CuA:						
Cygnet	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
DeA:						
Del Rey	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
DfA:						
Del Rey	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
Blount	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00
DuB:						
Dunbridge	Slight		Low		Moderate	
	Water erosion	0.06			Low strength	0.50
EmA:						
Elliott	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard		Seedling mortality		Soil rutting hazard	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FbA:						
Flatrock	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
FcA:						
Flatrock	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
FdA:						
Flatrock	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
FoA:						
Fox	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
FoB:						
Fox	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
FoC2:						
Fox	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
FsA:						
Fulton	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
FtA:						
Fulton	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
GaB:						
Gallman	Slight		Low		Severe	
	Water erosion	0.08			Low strength	1.00
GfA:						
Gilford	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
GmA:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
GnB:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
GpB2:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
GpC2:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
GsB:						
Glynwood	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
Blount	Slight		High		Severe	
	Water erosion	0.05	Wetness	1.00	Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
GsB:						
Houcktown-----------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
GuB:						
Glynwood------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
Urban land----------	Not rated		Not rated		Not rated	
HaA:						
Harrod--------------	Slight		Low		Severe	
	Water erosion	0.01			Low strength	1.00
HkA:						
Haskins-------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
HnA:						
Haskins-------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
HpA:						
Houcktown-----------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
HpB:						
Houcktown-----------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
HrB:						
Houcktown-----------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
Glynwood------------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
Jenera--------------	Slight		Low		Moderate	
	Water erosion	0.06			Low strength	0.50
HsA:						
Hoytville-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
HtA:						
Hoytville-----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
JeA:						
Jenera--------------	Slight		Low		Moderate	
	Water erosion	0.02			Low strength	0.50
JeB:						
Jenera--------------	Slight		Low		Moderate	
	Water erosion	0.08			Low strength	0.50
JfB:						
Jenera--------------	Slight		Low		Moderate	
	Water erosion	0.06			Low strength	0.50
Shinrock------------	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
JoA:						
Joliet	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
KnA:						
Knoxdale	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
LbA:						
Lamberjack	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
LcA:						
Lamberjack	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Urban land	Not rated		Not rated		Not rated	
LuB2:						
Lucas	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
LyE:						
Lybrand	Severe		Low		Severe	
	Water erosion	0.83			Low strength	1.00
MbA:						
Medway	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
McA:						
Medway	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MeA:						
Mermill	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MfA:						
Mermill	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MgA:						
Millsdale	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
MnA:						
Milton	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MpD3:						
Morley	Moderate		Low		Severe	
	Water erosion	0.37			Low strength	1.00
MrA:						
Morley	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
MsB:						
Morley	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
MsB:						
Milton--------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MvB:						
Mortimer------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
MwB2:						
Mortimer------------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
NnA:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
NnB:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00
NpA:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
NpB2:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.10	Wetness	1.00	Low strength	1.00
NrA:						
Nappanee------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
Urban land----------	Not rated		Not rated		Not rated	
OrA:						
Oshtemo-------------	Slight		Low		Moderate	
	Water erosion	0.02			Low strength	0.50
OrB:						
Oshtemo-------------	Slight		Low		Moderate	
	Water erosion	0.08			Low strength	0.50
OrC:						
Oshtemo-------------	Slight		Low		Moderate	
	Water erosion	0.18			Low strength	0.50
OsB:						
Oshtemo-------------	Slight		Low		Moderate	
	Water erosion	0.08			Low strength	0.50
OwB:						
Ottokee-------------	Slight		Low		Moderate	
	Water erosion	0.06			Low strength	0.50
PbA:						
Patton--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
PmA:						
Pewamo--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
PnA:						
Pewamo	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
RgB:						
Rawson	Slight		Low		Severe	
	Water erosion	0.08			Low strength	1.00
RhA:						
Rensselaer	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
RnA:						
Rimer	Slight		High		Moderate	
	Water erosion	0.02	Wetness	1.00	Low strength	0.50
RoA:						
Rimer	Slight		High		Moderate	
	Water erosion	0.02	Wetness	1.00	Low strength	0.50
RtA:						
Rossburg	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
SeA:						
Shawtown	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
SeB:						
Shawtown	Slight		Low		Severe	
	Water erosion	0.08			Low strength	1.00
SfB:						
Shinrock	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
SgC2:						
Shinrock	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
SkB:						
Shinrock	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
Glynwood	Slight		Low		Severe	
	Water erosion	0.07			Low strength	1.00
SmA:						
Shoals	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Erosion hazard: Value	Seedling mortality: Rating class and limiting features	Seedling mortality: Value	Soil rutting hazard: Rating class and limiting features	Soil rutting hazard: Value
SnA:						
Sloan----------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SoA:						
Sloan----------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
SpA:						
Sloan----------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
StB2:						
St. Clair-----------	Slight		Low		Severe	
	Water erosion	0.10			Low strength	1.00
StC2:						
St. Clair-----------	Slight		Low		Severe	
	Water erosion	0.22			Low strength	1.00
ThA:						
Thackery------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
TkA:						
Tiderishi-----------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00
TnA:						
Toledo--------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
ToB:						
Tuscola-------------	Slight		Low		Moderate	
	Water erosion	0.08			Low strength	0.50
TpA:						
Tuscola-------------	Slight		Low		Severe	
	Water erosion	0.02			Low strength	1.00
TpB:						
Tuscola-------------	Slight		Low		Severe	
	Water erosion	0.08			Low strength	1.00
TuB:						
Tuscola-------------	Slight		Low		Severe	
	Water erosion	0.08			Low strength	1.00
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	
UcD:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
VaA:						
Vanlue--------------	Slight		High		Severe	
	Water erosion	0.02	Wetness	1.00	Low strength	1.00

Table 11.--Woodland Management--Continued

Map symbol and soil name	Erosion hazard: Rating class and limiting features	Value	Seedling mortality: Rating class and limiting features	Value	Soil rutting hazard: Rating class and limiting features	Value
VeA:						
Vaughnsville--------	Slight		Low		Severe	
	Water erosion	0.04			Low strength	1.00
WeA:						
Westland------------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00
Rensselaer----------	Slight		High		Severe	
	Water erosion	0.01	Wetness	1.00	Low strength	1.00

Table 12.--Woodland Harvesting Activities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
AdA:						
Adrian	Severe		Poorly suited		Poorly suited	
	Low strength	1.00	Ponding	1.00	Low strength	1.00
			Low strength	1.00		
			Depth to saturated zone	1.00		
AkA:						
Alvada	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
AmA:						
Alvada	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
ApB:						
Arkport	Slight		Well suited		Well suited	
ArA:						
Aurand	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
AsA:						
Aurand	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Urban land	Not rated		Not rated		Not rated	
BgA:						
Biglick	Severe		Moderately well suited		Moderately well suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
Milton	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BgB:						
Biglick	Severe		Moderately well suited		Moderately well suited	
	Depth to bedrock	1.00	Low strength	0.50	Low strength	0.50
	Low strength	0.50				
Milton	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				
BnA:						
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
BoA:						
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
BoB:						
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
BpA:						
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
Houcktown	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
BrA:						
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
Jenera	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		
BuA:						
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
Urban land	Not rated		Not rated		Not rated	

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
ChC:						
Channahon-----------	Severe		Moderately well suited		Moderately well suited	
	Depth to bedrock	1.00	Slope	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
Biglick-------------	Severe		Moderately well suited		Moderately well suited	
	Depth to bedrock	1.00	Slope	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
CoA:						
Colwood-------------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
CtA:						
Cygnet--------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
CuA:						
Cygnet--------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Urban land----------	Not rated		Not rated		Not rated	
DbA:						
Darroch-------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
DeA:						
Del Rey-------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
DfA:						
Del Rey-------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Blount--------------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DuB:						
Dunbridge	Moderate		Well suited		Well suited	
	Depth to bedrock	0.50				
EmA:						
Elliott	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
FbA:						
Flatrock	Moderate		Moderately well suited		Moderately well suited	
	Flooding	0.50	Flooding	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
FcA:						
Flatrock	Moderate		Moderately well suited		Moderately well suited	
	Flooding	0.50	Flooding	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
FdA:						
Flatrock	Moderate		Moderately well suited		Moderately well suited	
	Flooding	0.50	Flooding	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
FoA:						
Fox	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FoB:						
Fox	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
FoC2:						
Fox	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
FsA:						
Fulton	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
FtA:						
Fulton	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
GaB:						
Gallman	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
GfA:						
Gilford	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
GmA:						
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
GnB:						
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
GpB2:						
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
GpC2:						
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
			Depth to saturated zone	0.50		
GsB:						
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Blount	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		
Houcktown	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings		Suitability for roads (natural surface)		Harvest equipment operability	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GuB:						
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Urban land	Not rated		Not rated		Not rated	
HaA:						
Harrod	Severe		Poorly suited		Moderately well suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
	Depth to bedrock	0.50	Depth to saturated zone	0.50		
HkA:						
Haskins	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
HnA:						
Haskins	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
HpA:						
Houcktown	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
HpB:						
Houcktown	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
HrB:						
Houcktown	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Glynwood	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Jenera	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
HsA:						
Hoytville-----------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
HtA:						
Hoytville-----------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
JeA:						
Jenera--------------	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		
JeB:						
Jenera--------------	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		
JfB:						
Jenera--------------	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		
Shinrock------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
JoA:						
Joliet--------------	Severe		Poorly suited		Moderately well suited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
KnA:						
Knoxdale------------	Moderate		Moderately well suited		Moderately well suited	
	Flooding	0.50	Flooding	0.50	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
LbA:						
Lamberjack----------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
LcA:						
Lamberjack----------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
Urban land----------	Not rated		Not rated		Not rated	
LuB2:						
Lucas---------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
LyE:						
Lybrand-------------	Severe		Poorly suited		Moderately well suited	
	Slope	1.00	Slope	1.00	Slope	0.50
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MbA:						
Medway--------------	Severe		Poorly suited		Moderately well suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
McA:						
Medway--------------	Severe		Poorly suited		Moderately well suited	
	Flooding	1.00	Flooding	1.00	Low strength	0.50
	Low strength	0.50	Low strength	0.50		
			Depth to saturated zone	0.50		
MeA:						
Mermill-------------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
MfA:						
Mermill-------------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
MgA:						
Millsdale-----------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
	Depth to bedrock	0.50	Depth to saturated zone	1.00		
			Low strength	0.50		
MnA:						
Milton--------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
	Depth to bedrock	0.50				

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
MpD3:						
Morley--------------	Moderate		Poorly suited		Moderately well	
	Slope	0.50	Slope	1.00	suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
MrA:						
Morley--------------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
			Low strength	0.50	Low strength	0.50
MsB:						
Morley--------------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
			Low strength	0.50	Low strength	0.50
Milton--------------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
	Depth to bedrock	0.50	Low strength	0.50	Low strength	0.50
MvB:						
Mortimer------------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
			Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
MwB2:						
Mortimer------------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
			Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
NnA:						
Nappanee------------	Moderate		Poorly suited		Moderately well	
	Low strength	0.50	Depth to saturated zone	1.00	suited	
					Low strength	0.50
			Low strength	0.50		
NnB:						
Nappanee------------	Moderate		Poorly suited		Moderately well	
	Low strength	0.50	Depth to saturated zone	1.00	suited	
					Low strength	0.50
			Low strength	0.50		
NpA:						
Nappanee------------	Moderate		Poorly suited		Moderately well	
	Low strength	0.50	Depth to saturated zone	1.00	suited	
					Low strength	0.50
			Low strength	0.50		
NpB2:						
Nappanee------------	Moderate		Poorly suited		Moderately well	
	Low strength	0.50	Depth to saturated zone	1.00	suited	
					Low strength	0.50
			Low strength	0.50		
NrA:						
Nappanee------------	Moderate		Poorly suited		Moderately well	
	Low strength	0.50	Depth to saturated zone	1.00	suited	
					Low strength	0.50
			Low strength	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
NrA:						
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Slight		Well suited		Well suited	
OrB:						
Oshtemo	Slight		Well suited		Well suited	
OrC:						
Oshtemo	Slight		Moderately well suited		Well suited	
			Slope	0.50		
OsB:						
Oshtemo	Slight		Well suited		Well suited	
OwB:						
Ottokee	Slight		Well suited		Well suited	
PbA:						
Patton	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
PmA:						
Pewamo	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
PnA:						
Pewamo	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	1.00	Low strength	0.50
	Depth to bedrock	0.50	Low strength	0.50		
RgB:						
Rawson	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
RhA:						
Rensselaer----------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
RnA:						
Rimer---------------	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		
RoA:						
Rimer---------------	Slight		Moderately well suited		Well suited	
			Depth to saturated zone	0.50		
RtA:						
Rossburg------------	Severe		Poorly suited		Moderately well suited	
	Flooding	1.00	Flooding	1.00		
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SeA:						
Shawtown------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SeB:						
Shawtown------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
SfB:						
Shinrock------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
SgC2:						
Shinrock------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
			Depth to saturated zone	0.50		
SkB:						
Shinrock------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
Glynwood------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
SmA:						
Shoals--------------	Severe		Poorly suited		Moderately well	
	Flooding	1.00	Flooding	1.00	suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
SnA:						
Sloan---------------	Severe		Poorly suited		Moderately well	
	Flooding	1.00	Ponding	1.00	suited	
	Low strength	0.50	Flooding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
SoA:						
Sloan---------------	Severe		Poorly suited		Moderately well	
	Flooding	1.00	Ponding	1.00	suited	
	Low strength	0.50	Flooding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
SpA:						
Sloan---------------	Severe		Poorly suited		Moderately well	
	Flooding	1.00	Ponding	1.00	suited	
	Low strength	0.50	Flooding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
StB2:						
St. Clair-----------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
	Stickiness	0.50	Low strength	0.50	Low strength	0.50
StC2:						
St. Clair-----------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
	Stickiness	0.50	Slope	0.50	Low strength	0.50
			Low strength	0.50		
ThA:						
Thackery------------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
			Low strength	0.50	Low strength	0.50
			Depth to saturated zone	0.50		
TkA:						
Tiderishi-----------	Moderate		Moderately well		Moderately well	
	Low strength	0.50	suited		suited	
			Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
TnA:						
Toledo--------------	Moderate		Poorly suited		Moderately well	
	Low strength	0.50	Ponding	1.00	suited	
			Depth to saturated zone	1.00	Low strength	0.50
			Low strength	0.50		

Table 12.--Woodland Harvesting Activities--Continued

Map symbol and soil name	Construction of haul roads and log landings: Rating class and limiting features	Value	Suitability for roads (natural surface): Rating class and limiting features	Value	Harvest equipment operability: Rating class and limiting features	Value
ToB:						
Tuscola-------------	Slight		Well suited		Well suited	
TpA:						
Tuscola-------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
TpB:						
Tuscola-------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
TuB:						
Tuscola-------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	
UcD:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
VaA:						
Vanlue--------------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Depth to saturated zone	0.50	Low strength	0.50
			Low strength	0.50		
VeA:						
Vaughnsville--------	Moderate		Moderately well suited		Moderately well suited	
	Low strength	0.50	Low strength	0.50	Low strength	0.50
WeA:						
Westland------------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		
Rensselaer----------	Moderate		Poorly suited		Moderately well suited	
	Low strength	0.50	Ponding	1.00	Low strength	0.50
			Depth to saturated zone	1.00		
			Low strength	0.50		

Table 13.--Woodland Regeneration Activities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian	Well suited		Well suited		Low	
AkA:						
Alvada	Well suited		Well suited		Low	
AmA:						
Alvada	Well suited		Well suited		Low	
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
ApB:						
Arkport	Well suited		Well suited		High	
					Texture/rock fragments	1.00
ArA:						
Aurand	Well suited		Well suited		Low	
AsA:						
Aurand	Well suited		Well suited		Low	
Urban land	Not rated		Not rated		Not rated	
BgA:						
Biglick	Moderately well suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50		
Milton	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
BgB:						
Biglick	Moderately well suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50		
Milton	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
BnA:						
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
BoA:						
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
BoB:						
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
BpA:						
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Houcktown	Well suited		Well suited		Low	
BrA:						
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Jenera	Well suited		Well suited		Low	
BuA:						
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Urban land	Not rated		Not rated		Not rated	
ChC:						
Channahon	Poorly suited		Well suited		Low	
	Rock fragment content	0.75				
	Slope	0.50				
Biglick	Moderately well suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50		
	Slope	0.50				
CoA:						
Colwood	Well suited		Well suited		Low	
CtA:						
Cygnet	Moderately well suited		Well suited		Low	
	Rock fragment content	0.50				
CuA:						
Cygnet	Moderately well suited		Well suited		Low	
	Rock fragment content	0.50				
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Well suited		Well suited		Low	
DeA:						
Del Rey	Moderately well suited		Well suited		Low	
	Stickiness	0.50				

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
DfA:						
Del Rey	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
DuB:						
Dunbridge	Moderately well suited		Well suited		Moderate	
	Rock fragment content	0.50			Texture/rock fragments	0.50
EmA:						
Elliott	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
FbA:						
Flatrock	Well suited		Well suited		Low	
FcA:						
Flatrock	Well suited		Well suited		Low	
FdA:						
Flatrock	Well suited		Well suited		Low	
FoA:						
Fox	Moderately well suited		Well suited		Low	
	Rock fragment content	0.50				
FoB:						
Fox	Moderately well suited		Well suited		Low	
	Rock fragment content	0.50				
FoC2:						
Fox	Moderately well suited		Well suited		Moderate	
	Rock fragment content	0.50			Texture/rock fragments	0.50
	Slope	0.50				
FsA:						
Fulton	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
FtA:						
Fulton	Moderately well suited		Well suited		Low	
	Stickiness	0.50				

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
GaB:						
Gallman	Moderately well suited		Well suited		Low	
	Rock fragment content	0.50				
GfA:						
Gilford	Well suited		Well suited		Low	
GmA:						
Glynwood	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
GnB:						
Glynwood	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
GpB2:						
Glynwood	Moderately well suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.70
GpC2:						
Glynwood	Moderately well suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.70
	Slope	0.50				
GsB:						
Glynwood	Moderately well suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
Blount	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Houcktown	Well suited		Well suited		Low	
GuB:						
Glynwood	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Urban land	Not rated		Not rated		Not rated	
HaA:						
Harrod	Well suited		Well suited		Low	
HkA:						
Haskins	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
HnA:						
Haskins	Well suited		Well suited		Low	
HpA:						
Houcktown	Well suited		Well suited		Low	

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
HpB:						
Houcktown	Well suited		Well suited		Low	
HrB:						
Houcktown	Well suited		Well suited		Low	
Glynwood	Moderately well suited		Well suited		Moderate	
	Stickiness	0.50			Texture/rock fragments	0.50
Jenera	Well suited		Well suited		Low	
HsA:						
Hoytville	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
HtA:						
Hoytville	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
JeA:						
Jenera	Well suited		Well suited		Low	
JeB:						
Jenera	Well suited		Well suited		Low	
JfB:						
Jenera	Well suited		Well suited		Low	
Shinrock	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
JoA:						
Joliet	Moderately well suited		Well suited		Low	
	Rock fragment content	0.50				
KnA:						
Knoxdale	Well suited		Well suited		Low	
LbA:						
Lamberjack	Well suited		Well suited		Low	
LcA:						
Lamberjack	Well suited		Well suited		Low	
Urban land	Not rated		Not rated		Not rated	
LuB2:						
Lucas	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
LyE:						
Lybrand	Unsuited		Poorly suited		Low	
	Slope	1.00	Slope	0.50	Texture/slope/ rock fragments	0.30
	Stickiness	0.50				

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MbA:						
Medway	Well suited		Well suited		Low	
McA:						
Medway	Well suited		Well suited		Low	
MeA:						
Mermill	Well suited		Well suited		Low	
MfA:						
Mermill	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
MgA:						
Millsdale	Moderately well suited		Well suited		Low	
					Texture/rock fragments	0.30
	Stickiness	0.50				
MnA:						
Milton	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
MpD3:						
Morley	Moderately well suited		Poorly suited		Moderate	
			Slope	0.50	Texture/rock fragments	0.50
	Slope	0.50				
	Stickiness	0.50				
MrA:						
Morley	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
MsB:						
Morley	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Milton	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
MvB:						
Mortimer	Moderately well suited		Poorly suited		Low	
			Stickiness	0.50		
	Stickiness	0.50				
MwB2:						
Mortimer	Moderately well suited		Poorly suited		Moderate	
			Stickiness	0.50	Texture/rock fragments	0.70
	Stickiness	0.50				
NnA:						
Nappanee	Moderately well suited		Poorly suited		Low	
			Stickiness	0.50		
	Stickiness	0.50				

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
NnB:						
Nappanee	Moderately well suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50		
NpA:						
Nappanee	Moderately well suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.30
NpB2:						
Nappanee	Moderately well suited		Poorly suited		Moderate	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.70
NrA:						
Nappanee	Moderately well suited		Poorly suited		Low	
	Stickiness	0.50	Stickiness	0.50		
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
OrB:						
Oshtemo	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
OrC:						
Oshtemo	Moderately well suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.50
OsB:						
Oshtemo	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
OwB:						
Ottokee	Well suited		Well suited		High	
					Texture/rock fragments	1.00
PbA:						
Patton	Well suited		Well suited		Low	
					Texture/rock fragments	0.30
PmA:						
Pewamo	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
PnA:						
Pewamo	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PnA:						
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
RgB:						
Rawson	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RhA:						
Rensselaer	Well suited		Well suited		Low	
RnA:						
Rimer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RoA:						
Rimer	Well suited		Well suited		Moderate	
					Texture/rock fragments	0.50
RtA:						
Rossburg	Well suited		Well suited		Low	
SeA:						
Shawtown	Well suited		Well suited		Low	
SeB:						
Shawtown	Well suited		Well suited		Low	
SfB:						
Shinrock	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
SgC2:						
Shinrock	Moderately well suited		Well suited		Moderate	
	Slope	0.50			Texture/rock fragments	0.70
	Stickiness	0.50				
SkB:						
Shinrock	Moderately well suited		Well suited		Low	
	Stickiness	0.50				
Glynwood	Moderately well suited		Well suited		Moderate	
					Texture/rock fragments	0.70
	Stickiness	0.50				
SmA:						
Shoals	Well suited		Well suited		Low	

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting: Rating class and limiting features	Value	Suitability for site preparation: Rating class and limiting features	Value	Potential for damage to soil by fire: Rating class and limiting features	Value
SnA:						
Sloan	Well suited		Well suited		Low	
SoA:						
Sloan	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
SpA:						
Sloan	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
StB2:						
St. Clair	Moderately well suited		Poorly suited		High	
	Stickiness	0.50	Stickiness	0.50	Texture/surface depth/rock fragments	1.00
StC2:						
St. Clair	Moderately well suited		Poorly suited		Moderate	
	Stickiness	0.50	Stickiness	0.50	Texture/rock fragments	0.70
	Slope	0.50				
ThA:						
Thackery	Well suited		Well suited		Low	
TkA:						
Tiderishi	Well suited		Well suited		Low	
TnA:						
Toledo	Moderately well suited		Well suited		Low	
	Stickiness	0.50			Texture/rock fragments	0.30
ToB:						
Tuscola	Well suited		Well suited		High	
					Texture/rock fragments	1.00
TpA:						
Tuscola	Well suited		Well suited		Low	
TpB:						
Tuscola	Well suited		Well suited		Low	
TuB:						
Tuscola	Well suited		Well suited		Low	
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcD:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
VaA:						
Vanlue	Well suited		Well suited		Low	

Table 13.--Woodland Regeneration Activities--Continued

Map symbol and soil name	Suitability for mechanical planting		Suitability for site preparation		Potential for damage to soil by fire	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeA:						
Vaughnsville--------	Well suited		Well suited		Low	
WeA:						
Westland------------	Well suited		Well suited		Low	
Rensselaer----------	Well suited		Well suited		Low	

Table 14.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height.)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
AdA:					
Adrian	Common ninebark, silky dogwood	Nannyberry	Black willow	---	---
AkA:					
Alvada	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
AmA:					
Alvada	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
Urban land	---	---	---	---	---
AnA:					
Aquents	---	---	---	---	---
ApB:					
Arkport	Redbud	American cranberrybush, Washington hawthorn	Austrian pine, Osage-orange	Arborvitae, Norway spruce, eastern white pine	Northern red oak
ArA:					
Aurand	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
AsA:					
Aurand	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
Urban land	---	---	---	---	---
BgA:					
Biglick	Redbud	Washington hawthorn, eastern redcedar, arborvitae	Chinkapin oak	---	---

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
BgA:					
Milton	Japanese tree lilac, Siberian peashrub, redbud	Washington hawthorn, eastern redcedar, radiant crabapple	Austrian pine, Osage-orange, eastern white pine	---	---
BgB:					
Biglick	Redbud	Washington hawthorn, eastern redcedar, arborvitae	Chinkapin oak	---	---
Milton	Japanese tree lilac, Siberian peashrub, redbud	Washington hawthorn, eastern redcedar, radiant crabapple	Austrian pine, Osage-orange, eastern white pine	---	---
BnA:					
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
BoA:					
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
BoB:					
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
BpA:					
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
Houcktown	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
BrA:					
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
Jenera	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
BuA:					
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
Urban land	---	---	---	---	---

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
ChC:					
Channahon	Redbud	Washington hawthorn, eastern redcedar, arborvitae	Chinkapin oak	---	---
Biglick	Redbud	Washington hawthorn, eastern redcedar, arborvitae	Chinkapin oak	---	---
CoA:					
Colwood	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
CtA:					
Cygnet	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
CuA:					
Cygnet	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
Urban land	---	---	---	---	---
DbA:					
Darroch	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
DeA:					
Del Rey	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
DfA:					
Del Rey	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
DuB:					
Dunbridge	Japanese tree lilac, Siberian peashrub, redbud	Washington hawthorn, eastern redcedar, radiant crabapple	Austrian pine, Osage-orange, eastern white pine	---	---
EmA:					
Elliott	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
FbA:					
Flatrock	Silky dogwood	American cranberrybush, blackhaw, European alder, Washington hawthorn, eastern redcedar, southern arrowwood	Osage-orange, blue spruce, arborvitae	Austrian pine, Norway spruce	Pin oak, eastern white pine

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
FcA: Flatrock	Silky dogwood	American cranberrybush, blackhaw, European alder, Washington hawthorn, eastern redcedar, southern arrowwood	Osage-orange, blue spruce, arborvitae	Austrian pine, Norway spruce	Pin oak, eastern white pine
FdA: Flatrock	Silky dogwood	American cranberrybush, blackhaw, European alder, Washington hawthorn, eastern redcedar, southern arrowwood	Osage-orange, blue spruce, arborvitae	Austrian pine, Norway spruce	Pin oak, eastern white pine
FoA: Fox	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
FoB: Fox	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
FoC2: Fox	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
FsA: Fulton	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
FtA: Fulton	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
GaB: Gallman	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
GfA: Gilford	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
GmA: Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
GnB: Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
GpB2:					
Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern	Baldcypress, Osage-orange, Austrian pine,	Norway spruce, green ash, black oak, pin oak	Northern red oak
GpC2:					
Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
GsB:					
Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
Blount	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
Houcktown	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
GuB:					
Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
Urban land	---	---	---	---	---
HaA:					
Harrod	American cranberrybush, redbud	Southern arrowwood, Washington hawthorn	Austrian pine, arborvitae, Norway spruce	Eastern white pine, green ash, pin oak	Northern red oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HkA:					
Haskins-----------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
HnA:					
Haskins-----------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
HpA:					
Houcktown---------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
HpB:					
Houcktown---------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
HrB:					
Houcktown---------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
Glynwood----------------	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
Jenera------------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HsA:					
Hoytville	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
HtA:					
Hoytville	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
JeA:					
Jenera	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
JeB:					
Jenera	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
JfB:					
Jenera	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
Shinrock	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
JoA:					
Joliet	European alder, silky dogwood	Baldcypress, arborvitae	Green ash	---	---

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
KnA:					
Knoxdale	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
LbA:					
Lamberjack	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
LcA:					
Lamberjack	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
Urban land	---	---	---	---	---
LuB2:					
Lucas	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
LyE:					
Lybrand	American cranberrybush	Washington hawthorn, eastern redcedar, southern arrowwood	Osage-orange, Austrian pine	Green ash, eastern white pine	Northern red oak
MbA:					
Medway	Silky dogwood	American cranberrybush, blackhaw, European alder, Washington hawthorn, eastern redcedar, southern arrowwood	Osage-orange, blue spruce, arborvitae	Austrian pine, Norway spruce	Pin oak, eastern white pine

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
McA: Medway	Silky dogwood	American cranberrybush, blackhaw, European alder, Washington hawthorn, eastern redcedar, southern arrowwood	Osage-orange, blue spruce, arborvitae	Austrian pine, Norway spruce	Pin oak, eastern white pine
MeA: Mermill	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
MfA: Mermill	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
MgA: Millsdale	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
MnA: Milton	Japanese tree lilac, Siberian peashrub, redbud	Washington hawthorn, eastern redcedar, radiant crabapple	Austrian pine, Osage-orange, eastern white pine	---	---
MpD3: Morley	American cranberrybush, redbud	Southern arrowwood, Washington hawthorn	Austrian pine, arborvitae, Norway spruce	Eastern white pine, green ash, pin oak	Northern red oak
MrA: Morley	American cranberrybush, redbud	Southern arrowwood, Washington hawthorn	Austrian pine, arborvitae, Norway spruce	Eastern white pine, green ash, pin oak	Northern red oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
MsB:					
Morley	American cranberrybush, redbud	Southern arrowwood, Washington hawthorn	Austrian pine, arborvitae, Norway spruce	Eastern white pine, green ash, pin oak	Northern red oak
Milton	Japanese tree lilac, Siberian peashrub, redbud	Washington hawthorn, eastern redcedar, radiant crabapple	Austrian pine, Osage-orange, eastern white pine	---	---
MvB:					
Mortimer	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
MwB2:					
Mortimer	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
NnA:					
Nappanee	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
NnB:					
Nappanee	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
NpA:					
Nappanee	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
NpB2:					
Nappanee	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
NrA:					
Nappanee	Silky dogwood, southern arrowwood	American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, eastern redcedar	Green ash, Osage-orange, Austrian pine, Norway spruce, arborvitae	Shumard oak, pin oak	Swamp white oak
Urban land	---	---	---	---	---
OrA:					
Oshtemo	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
OrB:					
Oshtemo	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
OrC:					
Oshtemo	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
OsB:					
Oshtemo	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
OwB:					
Ottokee	Redbud	American cranberrybush, Washington hawthorn	Blue spruce, arborvitae	Austrian pine, Norway spruce	Eastern white pine
PbA:					
Patton	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
PmA:					
Pewamo	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
PnA:					
Pewamo	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
Urban land	---	---	---	---	---

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
RcA: Randolph	Silky dogwood	American cranberrybush, American cranberrybush, European alder, Washington hawthorn, baldcypress, blackhaw, southern arrowwood	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
RgB: Rawson	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
RhA: Rensselaer	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
RnA: Rimer	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
RoA: Rimer	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
RtA: Rossburg	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
SeA:					
Shawtown	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
SeB:					
Shawtown	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
SfB:					
Shinrock	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
SgC2:					
Shinrock	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
SkB:					
Shinrock	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
Glynwood	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
SmA:					
Shoals	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
SnA:					
Sloan-------------------	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
SoA:					
Sloan-------------------	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
SpA:					
Sloan-------------------	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
StB2:					
St. Clair---------------	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
StC2:					
St. Clair---------------	American cranberrybush, blackhaw	Southern arrowwood, Washington hawthorn, eastern redcedar	Baldcypress, Osage-orange, Austrian pine, arborvitae	Norway spruce, green ash, black oak, pin oak	Northern red oak
ThA:					
Thackery----------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
TkA:					
Tiderishi---------------	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
TnA:					
Toledo	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
ToB:					
Tuscola	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
TpA:					
Tuscola	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
TpB:					
Tuscola	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
TuB:					
Tuscola	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	White fir, baldcypress, blue spruce, eastern redcedar, arborvitae	Austrian pine, Norway spruce, green ash, pin oak	Eastern white pine
UcA:					
Udorthents	---	---	---	---	---
UcD:					
Udorthents	---	---	---	---	---
Ur:					
Urban land	---	---	---	---	---

Table 14.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of-- <8	8-15	16-25	26-35	>35
VaA:					
Vanlue	Silky dogwood	American cranberrybush, European alder, Washington hawthorn	Baldcypress, eastern redcedar, arborvitae, Austrian pine	Pin oak, Norway spruce	Green ash
VeA:					
Vaughnsville	Japanese tree lilac, Siberian peashrub, redbud	European alder, radiant crabapple, Siberian crabapple, Washington hawthorn, eastern redcedar	Austrian pine, Osage-orange, blue spruce, eastern white pine, Norway spruce, arborvitae	White oak, white spruce	Northern red oak, white ash, eastern white pine
WeA:					
Westland	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak
Rensselaer	Silky dogwood	American cranberrybush, European alder, baldcypress	Washington hawthorn, arborvitae, Austrian pine, eastern redcedar, green ash	Norway spruce, swamp white oak	Pin oak

Table 15.--Recreational Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
AdA:						
Adrian	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Content of organic matter	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Content of organic matter	1.00	Content of organic matter	1.00	Depth to saturated zone	1.00
AkA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AmA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
ApB:						
Arkport	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.79	Too sandy	0.79	Too sandy	0.79
					Slope	0.50
ArA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
Urban land	Not rated		Not rated		Not rated	
BgA:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
BgA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
BgB:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Slope	0.50
					Restricted permeability	0.43
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.80
					Slope	0.50
					Restricted permeability	0.21
BnA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
BoA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
BoB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.13
BpA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.00
Houcktown	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Slope	0.00
BrA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.00

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BrA:						
Jenera--------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.00
BuA:						
Blount--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Urban land----------	Not rated		Not rated		Not rated	
ChC:						
Channahon-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Slope	0.04	Slope	0.04	Depth to bedrock	1.00
					Gravel content	0.02
					Content of large stones	0.01
Biglick-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Depth to bedrock	1.00
	Slope	0.04	Slope	0.04	Restricted permeability	0.43
CoA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtA:						
Cygnet--------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Gravel content	0.06
CuA:						
Cygnet--------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Gravel content	0.06
Urban land----------	Not rated		Not rated		Not rated	
DbA:						
Darroch-------------	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
DeA:						
Del Rey-------------	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Depth to saturated zone	1.00
	Restricted permeability	0.96	Depth to saturated zone	0.94	Restricted permeability	0.96

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
DfA:						
Del Rey	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Depth to saturated zone	1.00
	Restricted permeability	0.96	Depth to saturated zone	0.94	Restricted permeability	0.96
					Slope	0.00
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.00
DuB:						
Dunbridge	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.94	Too sandy	0.94	Too sandy	0.94
					Depth to bedrock	0.84
					Slope	0.13
EmA:						
Elliott	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
FbA:						
Flatrock	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Depth to saturated zone	1.00			Flooding	0.60
FcA:						
Flatrock	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Depth to saturated zone	1.00			Flooding	0.60
FdA:						
Flatrock	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Depth to saturated zone	1.00			Flooding	0.60
FoA:						
Fox	Not limited		Not limited		Somewhat limited	
					Gravel content	0.22
FoB:						
Fox	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.22
FoC2:						
Fox	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
					Gravel content	0.22

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
FsA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
FtA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
GaB:						
Gallman	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
GfA:						
Gilford	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GmA:						
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
GnB:						
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.50
GpB2:						
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.50
GpC2:						
Glynwood	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Slope	1.00
	Restricted permeability	0.96	Depth to saturated zone	0.75	Restricted permeability	0.96
	Slope	0.04	Slope	0.04	Depth to saturated zone	0.95
GsB:						
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.13

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
GsB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.00
Houcktown	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Slope	0.13
GuB:						
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.50
Urban land	Not rated		Not rated		Not rated	
HaA:						
Harrod	Very limited		Somewhat limited		Very limited	
	Flooding	1.00	Depth to saturated zone	0.75	Flooding	1.00
	Depth to saturated zone	1.00	Flooding	0.40	Depth to saturated zone	0.95
HkA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
HnA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
HpA:						
Houcktown	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
HpB:						
Houcktown	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.43	Restricted permeability	0.43	Slope	0.50
					Restricted permeability	0.43

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
HrB:						
Houcktown	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Slope	0.13
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.13
Jenera	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.13
HsA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
HtA:						
Hoytville	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Too clayey	1.00	Too clayey	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
JeA:						
Jenera	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
JeB:						
Jenera	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.50
JfB:						
Jenera	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
Shinrock	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
					Gravel content	0.04
KnA:						
Knoxdale	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
LbA:						
Lamberjack	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Gravel content	0.22
LcA:						
Lamberjack	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Gravel content	0.22
Urban land	Not rated		Not rated		Not rated	
LuB2:						
Lucas	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
					Slope	0.50
LyE:						
Lybrand	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
MbA:						
Medway	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Depth to saturated zone	1.00			Flooding	0.60
					Gravel content	0.06
McA:						
Medway	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Depth to saturated zone	1.00			Flooding	0.60
					Gravel content	0.06
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
MgA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Gravel content	0.06
MnA:						
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
MpD3:						
Morley	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
MrA:						
Morley	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
MsB:						
Morley	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.43	Restricted permeability	0.43	Slope	0.50
					Restricted permeability	0.43
Milton	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to bedrock	0.54
					Slope	0.50
					Restricted permeability	0.21
MvB:						
Mortimer	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.50
MwB2:						
Mortimer	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.50

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.50
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.50
NrA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Not limited		Not limited		Somewhat limited	
					Gravel content	0.22
OrB:						
Oshtemo	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.22
OrC:						
Oshtemo	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
					Gravel content	0.22
OsB:						
Oshtemo	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.22
OwB:						
Ottokee	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.96	Too sandy	0.96	Too sandy	0.96
					Slope	0.13

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
PbA:						
Patton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
PmA:						
Pewamo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
PnA:						
Pewamo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
RgB:						
Rawson	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.98	Restricted permeability	0.98	Restricted permeability	0.98
					Slope	0.50
					Gravel content	0.06
RhA:						
Rensselaer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RnA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
	Too sandy	0.70	Too sandy	0.70	Too sandy	0.70
RoA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.85	Too sandy	0.85	Too sandy	0.85

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
RtA:						
Rossburg	Very limited		Not limited		Somewhat limited	
	Flooding	1.00			Flooding	0.60
SeA:						
Shawtown	Not limited		Not limited		Somewhat limited	
					Gravel content	0.06
SeB:						
Shawtown	Not limited		Not limited		Somewhat limited	
					Slope	0.50
					Gravel content	0.06
SfB:						
Shinrock	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Slope	0.50
					Restricted permeability	0.21
SgC2:						
Shinrock	Very limited		Somewhat limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Slope	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Depth to saturated zone	0.95
	Slope	0.04	Slope	0.04	Restricted permeability	0.21
SkB:						
Shinrock	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.75	Depth to saturated zone	0.95
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
					Slope	0.13
Glynwood	Very limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	1.00	Restricted permeability	0.96	Restricted permeability	0.96
	Restricted permeability	0.96	Depth to saturated zone	0.75	Depth to saturated zone	0.95
					Slope	0.13
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00			Flooding	0.60
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00			Flooding	0.60
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00			Flooding	0.60

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
SpA:						
Sloan---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Ponding	1.00			Flooding	0.60
StB2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
					Slope	0.50
StC2:						
St. Clair-----------	Somewhat limited		Somewhat limited		Very limited	
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	1.00
	Slope	0.04	Slope	0.04	Restricted permeability	0.96
ThA:						
Thackery------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.48	Depth to saturated zone	0.77
TkA:						
Tiderishi-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TnA:						
Toledo--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Restricted permeability	0.96
ToB:						
Tuscola-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Too sandy	0.79	Too sandy	0.79	Too sandy	0.79
	Depth to saturated zone	0.44	Depth to saturated zone	0.19	Depth to saturated zone	0.51
					Slope	0.50
TpA:						
Tuscola-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.19	Depth to saturated zone	0.51
TpB:						
Tuscola-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.19	Depth to saturated zone	0.51
					Slope	0.50
TuB:						
Tuscola-------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.19	Depth to saturated zone	0.51
					Slope	0.50

Table 15.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Camp areas: Rating class and limiting features	Camp areas: Value	Picnic areas: Rating class and limiting features	Picnic areas: Value	Playgrounds: Rating class and limiting features	Playgrounds: Value
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcD:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
VaA:						
Vanlue	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
VeA:						
Vaughnsville	Somewhat limited		Somewhat limited		Somewhat limited	
	Restricted permeability	0.43	Restricted permeability	0.43	Restricted permeability	0.43
					Gravel content	0.06
					Slope	0.00
WeA:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Rensselaer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 16.--Recreational Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Paths and trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:				
Adrian	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Content of organic matter	1.00	Content of organic matter	1.00
	Ponding	1.00	Depth to saturated zone	1.00
AkA:				
Alvada	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
AmA:				
Alvada	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated	
AnA:				
Aquents	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
ApB:				
Arkport	Somewhat limited		Somewhat limited	
	Too sandy	0.79	Droughty	0.03
ArA:				
Aurand	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AsA:				
Aurand	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated	
BgA:				
Biglick	Not limited		Very limited	
			Depth to bedrock	1.00
			Droughty	0.85
Milton	Not limited		Somewhat limited	
			Depth to bedrock	0.90
BgB:				
Biglick	Not limited		Very limited	
			Depth to bedrock	1.00
			Droughty	0.94

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
BgB:				
Milton	Not limited		Somewhat limited	
			Depth to bedrock	0.80
BnA:				
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
BoA:				
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
BoB:				
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
BpA:				
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Houcktown	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
BrA:				
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Jenera	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
BuA:				
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated	
ChC:				
Channahon	Not limited		Very limited	
			Depth to bedrock	1.00
			Droughty	0.87
			Slope	0.04
			Content of large stones	0.01
Biglick	Not limited		Very limited	
			Depth to bedrock	1.00
			Droughty	1.00
			Slope	0.04
CoA:				
Colwood	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
CtA:				
Cygnet	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
CuA:				
Cygnet	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Urban land	Not rated		Not rated	
DbA:				
Darroch	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
DeA:				
Del Rey	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.94
DfA:				
Del Rey	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.86	Depth to saturated zone	0.94
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
DuB:				
Dunbridge	Somewhat limited		Somewhat limited	
	Too sandy	0.94	Depth to bedrock	0.84
			Droughty	0.18
EmA:				
Elliott	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
FbA:				
Flatrock	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
			Flooding	0.60
FcA:				
Flatrock	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
			Flooding	0.60
FdA:				
Flatrock	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
			Flooding	0.60
FoA:				
Fox	Not limited		Not limited	

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
FoB:				
Fox	Not limited		Not limited	
FoC2:				
Fox	Very limited		Somewhat limited	
	Water erosion	1.00	Slope	0.04
FsA:				
Fulton	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
FtA:				
Fulton	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GaB:				
Gallman	Not limited		Not limited	
GfA:				
Gilford	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
GmA:				
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
GnB:				
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
GpB2:				
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
GpC2:				
Glynwood	Very limited		Somewhat limited	
	Water erosion	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.44	Slope	0.04
GsB:				
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Blount	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Houcktown	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
GuB:				
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Urban land	Not rated		Not rated	
HaA:				
Harrod	Somewhat limited		Very limited	
	Depth to saturated zone	0.44	Flooding	1.00
	Flooding	0.40	Depth to saturated zone	0.75
			Depth to bedrock	0.23
HkA:				
Haskins	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HnA:				
Haskins	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HpA:				
Houcktown	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
HpB:				
Houcktown	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
HrB:				
Houcktown	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Jenera	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
HsA:				
Hoytville	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
HtA:				
Hoytville	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00	Too clayey	1.00

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
JeA:				
Jenera	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
JeB:				
Jenera	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
JfB:				
Jenera	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Shinrock	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
JoA:				
Joliet	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Depth to bedrock	1.00
			Droughty	0.01
KnA:				
Knoxdale	Not limited		Somewhat limited	
			Flooding	0.60
LbA:				
Lamberjack	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
LcA:				
Lamberjack	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated	
LuB2:				
Lucas	Not limited		Not limited	
LyE:				
Lybrand	Very limited		Very limited	
	Water erosion	1.00	Slope	1.00
	Slope	1.00		
MbA:				
Medway	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
			Flooding	0.60
McA:				
Medway	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
			Flooding	0.60

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
MeA:				
Mermill	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
MfA:				
Mermill	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
MgA:				
Millsdale	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
			Depth to bedrock	0.10
MnA:				
Milton	Not limited		Somewhat limited	
			Depth to bedrock	0.54
MpD3:				
Morley	Very limited		Very limited	
	Water erosion	1.00	Slope	1.00
	Slope	0.00		
MrA:				
Morley	Not limited		Not limited	
MsB:				
Morley	Not limited		Not limited	
Milton	Not limited		Somewhat limited	
			Depth to bedrock	0.54
MvB:				
Mortimer	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
MwB2:				
Mortimer	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
NnA:				
Nappanee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NnB:				
Nappanee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NpA:				
Nappanee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
NpB2:				
Nappanee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
NrA:				
Nappanee	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated	
OrA:				
Oshtemo	Not limited		Not limited	
OrB:				
Oshtemo	Not limited		Not limited	
OrC:				
Oshtemo	Not limited		Somewhat limited	
			Slope	0.04
OsB:				
Oshtemo	Not limited		Not limited	
OwB:				
Ottokee	Somewhat limited		Somewhat limited	
	Too sandy	0.96	Droughty	0.12
PbA:				
Patton	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
PmA:				
Pewamo	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
PnA:				
Pewamo	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated	
Pt:				
Pits	Not rated		Not rated	
RcA:				
Randolph	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Depth to bedrock	0.84
RgB:				
Rawson	Not limited		Not limited	

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Paths and trails: Value	Golf fairways: Rating class and limiting features	Golf fairways: Value
RhA:				
Rensselaer	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
RnA:				
Rimer	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.70	Droughty	0.01
RoA:				
Rimer	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too sandy	0.85		
RtA:				
Rossburg	Not limited		Somewhat limited	
			Flooding	0.60
SeA:				
Shawtown	Not limited		Not limited	
SeB:				
Shawtown	Not limited		Not limited	
SfB:				
Shinrock	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
SgC2:				
Shinrock	Very limited		Somewhat limited	
	Water erosion	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.44	Slope	0.04
SkB:				
Shinrock	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
Glynwood	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.44	Depth to saturated zone	0.75
SmA:				
Shoals	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Flooding	0.60
SnA:				
Sloan	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
			Flooding	0.60

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
SoA:				
Sloan	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
			Flooding	0.60
SpA:				
Sloan	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
			Flooding	0.60
StB2:				
St. Clair	Not limited		Not limited	
StC2:				
St. Clair	Very limited		Somewhat limited	
	Water erosion	1.00	Slope	0.04
ThA:				
Thackery	Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.11	Depth to saturated zone	0.48
TkA:				
Tiderishi	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TnA:				
Toledo	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
ToB:				
Tuscola	Somewhat limited		Somewhat limited	
	Too sandy	0.79	Depth to saturated zone	0.19
TpA:				
Tuscola	Not limited		Somewhat limited	
			Depth to saturated zone	0.19
TpB:				
Tuscola	Not limited		Somewhat limited	
			Depth to saturated zone	0.19
TuB:				
Tuscola	Not limited		Somewhat limited	
			Depth to saturated zone	0.19
UcA:				
Udorthents	Not rated		Not rated	

Table 16.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Paths and trails		Golf fairways	
	Rating class and limiting features	Value	Rating class and limiting features	Value
UcD:				
Udorthents----------	Not rated		Not rated	
Ur:				
Urban land----------	Not rated		Not rated	
VaA:				
Vanlue--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
VeA:				
Vaughnsville--------	Not limited		Not limited	
WeA:				
Westland------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
Rensselaer----------	Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00

Table 17.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wet- land wild- life
AdA:										
Adrian	Very poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
AkA:										
Alvada	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
AmA:										
Alvada	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Urban land	---	---	---	---	---	---	---	---	---	---
AnA:										
Aquents	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
ApB:										
Arkport	Poor	Fair	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor
ArA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
AsA:										
Aurand	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Urban land	---	---	---	---	---	---	---	---	---	---
BgA:										
Biglick	Poor	Poor	Fair	Poor	Poor	Poor	Very poor	Poor	Poor	Very poor
Milton	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BgB:										
Biglick	Poor	Poor	Fair	Poor	Poor	Poor	Very poor	Poor	Poor	Very poor
Milton	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BnA:										
Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
BoA:										
Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
BoB:										
Blount	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
BpA:										
Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Houcktown	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hard-wood trees	Conif-erous plants	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wet-land wild-life
BrA:										
Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Jenera	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
BuA:										
Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Urban land	---	---	---	---	---	---	---	---	---	---
ChC:										
Channahon	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
Biglick	Poor	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Poor	Very poor
CoA:										
Colwood	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
CtA:										
Cygnet	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
CuA:										
Cygnet	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Urban land	---	---	---	---	---	---	---	---	---	---
DbA:										
Darroch	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
DeA:										
Del Rey	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
DfA:										
Del Rey	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Blount	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
DuB:										
Dunbridge	Fair	Fair	Good	Fair	Fair	Poor	Very poor	Fair	Fair	Very poor
EmA:										
Elliott	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
FbA:										
Flatrock	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
FcA:										
Flatrock	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
FdA:										
Flatrock	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
FoA:										
Fox	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
FoB:										
Fox	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
FoC2:										
Fox	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
FsA:										
Fulton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
FtA:										
Fulton	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
GaB:										
Gallman	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
GfA:										
Gilford	Poor	Poor	Poor	Poor	Poor	Good	Good	Fair	Poor	Good
GmA:										
Glynwood	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
GnB:										
Glynwood	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
GpB2:										
Glynwood	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
GpC2:										
Glynwood	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
GsB:										
Glynwood	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Blount	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Houcktown	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
GuB:										
Glynwood	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Urban land	---	---	---	---	---	---	---	---	---	---
HaA:										
Harrod	Fair	Good	Fair	Good	Good	Poor	Poor	Fair	Good	Poor
HkA:										
Haskins	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
HnA:										
Haskins	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
HpA:										
Houcktown	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wet- land wild- life
HpB:										
Houcktown	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
HrB:										
Houcktown	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Glynwood	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Jenera	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
HsA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
HtA:										
Hoytville	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
JeA:										
Jenera	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
JeB:										
Jenera	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
JfB:										
Jenera	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Shinrock	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
JoA:										
Joliet	Poor	Poor	Fair	Fair	Fair	Good	Poor	Poor	Fair	Fair
KnA:										
Knoxdale	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LbA:										
Lamberjack	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
LcA:										
Lamberjack	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Urban land	---	---	---	---	---	---	---	---	---	---
LuB2:										
Lucas	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
LyE:										
Lybrand	Very poor	Poor	Good	Good	Good	Very poor	Very poor	Poor	Good	Very poor
MbA:										
Medway	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
McA:										
Medway	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
MeA:										
Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
MfA: Mermill	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
MgA: Millsdale	Poor	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair
MnA: Milton	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MpD3: Morley	Poor	Fair	Good	Good	Good	Very poor	Very poor	Fair	Good	Very poor
MrA: Morley	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MsB: Morley	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
Milton	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MvB: Mortimer	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
MwB2: Mortimer	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
NnA: Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
NnB: Nappanee	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor
NpA: Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
NpB2: Nappanee	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Poor
NrA: Nappanee	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
Urban land	---	---	---	---	---	---	---	---	---	---
OrA: Oshtemo	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
OrB: Oshtemo	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
OrC: Oshtemo	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
OsB: Oshtemo	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
OwB: Ottokee	Poor	Fair	Good	Good	Good	Poor	Very poor	Fair	Good	Very poor
PbA: Patton	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
PmA: Pewamo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
PnA: Pewamo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Urban land	---	---	---	---	---	---	---	---	---	---
Pt: Pits	---	---	---	---	---	---	---	---	---	---
RcA: Randolph	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
RgB: Rawson	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
RhA: Rensselaer	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
RnA: Rimer	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair
RoA: Rimer	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair
RtA: Rossburg	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SeA: Shawtown	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SeB: Shawtown	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
SfB: Shinrock	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SgC2:										
Shinrock	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
SkB:										
Shinrock	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
Glynwood	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
SmA:										
Shoals	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
SnA:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
SoA:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
SpA:										
Sloan	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
StB2:										
St. Clair	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
StC2:										
St. Clair	Fair	Good	Good	Good	Good	Very poor	Very poor	Good	Good	Very poor
ThA:										
Thackery	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
TkA:										
Tiderishi	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
TnA:										
Toledo	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
ToB:										
Tuscola	Fair	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TpA:										
Tuscola	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
TpB:										
Tuscola	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
TuB:										
Tuscola	Good	Good	Good	Good	Good	Poor	Very poor	Good	Good	Very poor
UcA:										
Udorthents	---	---	---	---	---	---	---	---	---	---
UcD:										
Udorthents	---	---	---	---	---	---	---	---	---	---

Table 17.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ur:										
Urban land	---	---	---	---	---	---	---	---	---	---
VaA:										
Vanlue	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair
VeA:										
Vaughnsville	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor
WeA:										
Westland	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good
Rensselaer	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good

Table 18.--Hydric Soils

Map symbol	Soil name
AdA	Adrian muck, 0 to 1 percent slopes
AkA	Alvada loam, 0 to 1 percent slopes
AmA	Alvada-Urban land complex, 0 to 2 percent slopes
AnA	Aquents, clayey, 0 to 1 percent slopes
CoA	Colwood loam, 0 to 1 percent slopes
GfA	Gilford mucky loam, 0 to 1 percent slopes
HsA	Hoytville silty clay loam, 0 to 1 percent slopes
HtA	Hoytville silty clay, 0 to 1 percent slopes
JoA	Joliet loam, 0 to 1 percent slopes
MeA	Mermill loam, 0 to 1 percent slopes
MfA	Mermill clay loam, 0 to 1 percent slopes
MgA	Millsdale silty clay loam, 0 to 1 percent slopes
PbA	Patton silty clay loam, 0 to 1 percent slopes
PmA	Pewamo silty clay loam, 0 to 1 percent slopes
PnA	Pewamo-Urban land complex, 0 to 2 percent slopes
RhA	Rensselaer loam, till substratum, 0 to 1 percent slopes
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
SpA	Sloan silty clay loam, limestone substratum, 0 to 1 percent slopes, occasionally flooded
TnA	Toledo silty clay loam, 0 to 1 percent slopes
WeA	Westland-Rensselaer complex, 0 to 1 percent slopes

Table 19.--Nonhydric Map Units with Hydric Components

Map symbol	Soil name
ArA	Aurand loam, 0 to 2 percent slopes
AsA	Aurand-Urban land complex, 0 to 2 percent slopes
BnA	Blount loam, 0 to 2 percent slopes
BoA	Blount silt loam, 0 to 2 percent slopes
BoB	Blount silt loam, 2 to 4 percent slopes
BpA	Blount-Houcktown complex, 0 to 3 percent slopes
BrA	Blount-Jenera complex, 0 to 3 percent slopes
BuA	Blount-Urban land complex, 0 to 2 percent slopes
CtA	Cygnet loam, 0 to 2 percent slopes
CuA	Cygnet-Urban land complex, 0 to 2 percent slopes
DbA	Darroch loam, 0 to 2 percent slopes
DeA	Del Rey silt loam, 0 to 2 percent slopes
DfA	Del Rey-Blount complex, 0 to 3 percent slopes
EmA	Elliott silt loam, 0 to 2 percent slopes
FbA	Flatrock loam, 0 to 2 percent slopes, occasionally flooded
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FdA	Flatrock silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded
FsA	Fulton silt loam, 0 to 2 percent slopes
FtA	Fulton silt loam, till substratum, 0 to 2 percent slopes
GnB	Glynwood silt loam, 2 to 6 percent slopes
GpB2	Glynwood silty clay loam, 2 to 6 percent slopes, eroded
GpC2	Glynwood silty clay loam, 6 to 12 percent slopes, eroded
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes
GuB	Glynwood-Urban land complex, 2 to 6 percent slopes
HaA	Harrod silt loam, 0 to 1 percent slopes, frequently flooded
HkA	Haskins fine sandy loam, 0 to 2 percent slopes
HnA	Haskins loam, 0 to 2 percent slopes
HpA	Houcktown loam, 0 to 2 percent slopes
HpB	Houcktown loam, 2 to 6 percent slopes
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes
JeA	Jenera fine sandy loam, 0 to 2 percent slopes
JeB	Jenera fine sandy loam, 2 to 6 percent slopes
JfB	Jenera-Shinrock, till substratum, complex, 1 to 4 percent slopes
KnA	Knoxdale silt loam, 0 to 2 percent slopes, occasionally flooded
LbA	Lamberjack loam, 0 to 2 percent slopes
LcA	Lamberjack-Urban land complex, 0 to 2 percent slopes
LuB2	Lucas silty clay loam, 2 to 6 percent slopes, eroded
MbA	Medway silt loam, 0 to 2 percent slopes, occasionally flooded
McA	Medway silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded
MpD3	Morley clay loam, 12 to 18 percent slopes, severely eroded
MvB	Mortimer silt loam, 2 to 6 percent slopes
NnA	Nappanee loam, 0 to 2 percent slopes
NnB	Nappanee loam, 2 to 6 percent slopes
NpA	Nappanee silty clay loam, 0 to 2 percent slopes
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded
NrA	Nappanee-Urban land complex, 0 to 2 percent slopes
OwB	Ottokee loamy fine sand, 0 to 6 percent slopes
RcA	Randolph silt loam, 0 to 2 percent slopes
RgB	Rawson sandy loam, 2 to 6 percent slopes
RnA	Rimer loamy sand, 0 to 2 percent slopes
RoA	Rimer loamy fine sand, deep phase, 0 to 2 percent slopes
RtA	Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded
SeA	Shawtown loam, 0 to 2 percent slopes
SfB	Shinrock silt loam, 2 to 6 percent slopes
SgC2	Shinrock silty clay loam, 6 to 12 percent slopes, eroded
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes
SmA	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded
StB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded
ThA	Thackery loam, till substratum, 0 to 2 percent slopes
TkA	Tiderishi loam, 0 to 2 percent slopes
ToB	Tuscola loamy fine sand, 2 to 6 percent slopes
TpA	Tuscola fine sandy loam, 0 to 2 percent slopes
TpB	Tuscola fine sandy loam, 2 to 6 percent slopes
TuB	Tuscola silt loam, 2 to 6 percent slopes
VaA	Vanlue loam, 0 to 2 percent slopes

Table 20.--Building Site Development (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
	Content of organic matter	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
AkA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AmA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ApB:						
Arkport	Not limited		Not limited		Not limited	
ArA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	
BgA:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.90	Depth to bedrock	1.00	Depth to bedrock	0.90
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
BgB:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.79	Depth to bedrock	1.00	Depth to bedrock	0.79
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BnA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BoA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BoB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
BpA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Houcktown	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
			Shrink-swell	0.50		
BrA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Jenera	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
BuA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
ChC:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Slope	0.04	Shrink-swell	0.50

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
ChC:						
Channahon	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
CoA:						
Colwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtA:						
Cygnet	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
CuA:						
Cygnet	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
DeA:						
Del Rey	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
DfA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Del Rey	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
DuB:						
Dunbridge	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.84	Depth to bedrock	1.00	Depth to bedrock	0.84
EmA:						
Elliott	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FbA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
FdA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
FoA:						
Fox	Not limited		Not limited		Not limited	
FoB:						
Fox	Not limited		Not limited		Not limited	
FoC2:						
Fox	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
FsA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
FtA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
GaB:						
Gallman	Not limited		Not limited		Not limited	
GfA:						
Gilford	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GmA:						
Glynwood	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
GnB:						
Glynwood	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
GpB2:						
Glynwood	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
GpC2:						
Glynwood	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to saturated zone	0.95
	Slope	0.04	Slope	0.04	Shrink-swell	0.50
GsB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Glynwood	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Houcktown	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
GuB:						
Glynwood	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
HaA:						
Harrod	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Depth to bedrock	0.23	Depth to bedrock	1.00	Depth to bedrock	0.23
HkA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HnA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HpA:						
Houcktown	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
HpB:						
Houcktown	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
			Shrink-swell	0.50		

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
HrB:						
Glynwood-----------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Houcktown----------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Jenera-------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
HsA:						
Hoytville----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
HtA:						
Hoytville----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
JeA:						
Jenera-------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
JeB:						
Jenera-------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
JfB:						
Jenera-------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
Shinrock-----------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
JoA:						
Joliet-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to becrock	1.00	Depth to saturated zone	1.00
KnA:						
Knoxdale-----------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
			Depth to saturated zone	0.24		

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
LbA:						
Lamberjack----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
LcA:						
Lamberjack----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Urban land----------	Not rated		Not rated		Not rated	
LuB2:						
Lucas---------------	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
LyE:						
Lybrand-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.53	Shrink-swell	0.50
			Shrink-swell	0.50		
MbA:						
Medway--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
McA:						
Medway--------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
MeA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
MfA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
MgA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Depth to bedrock	1.00	Shrink-swell	0.50
	Depth to bedrock	0.10	Shrink-swell	0.50	Depth to bedrock	0.10

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MnA:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.54	Depth to bedrock	1.00	Depth to bedrock	0.54
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MpD3:						
Morley	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
MrA:						
Morley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
MsB:						
Milton	Somewhat limited		Very limited		Somewhat limited	
	Depth to bedrock	0.54	Depth to bedrock	1.00	Depth to bedrock	0.54
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Morley	Somewhat limited		Somewhat limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	0.99	Shrink-swell	0.50
			Shrink-swell	0.50		
MvB:						
Mortimer	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
MwB2:						
Mortimer	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
NrA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Not limited		Not limited		Not limited	
OrB:						
Oshtemo	Not limited		Not limited		Not limited	
OrC:						
Oshtemo	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.04	Slope	0.04	Slope	1.00
OsB:						
Oshtemo	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.24		
OwB:						
Ottokee	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
PbA:						
Patton	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
PmA:						
Pewamo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
PnA:						
Pewamo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements		Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RcA:						
Randolph------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	0.84	Depth to bedrock	1.00	Depth to bedrock	0.84
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RgB:						
Rawson--------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
RhA:						
Rensselaer----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RnA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Shrink-swell	0.50		
RoA:						
Rimer---------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
RtA:						
Rossburg------------	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
SeA:						
Shawtown------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
SeB:						
Shawtown------------	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
SfB:						
Shinrock------------	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
SgC2:						
Shinrock------------	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Slope	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Depth to saturated zone	0.95
	Slope	0.04	Slope	0.04	Shrink-swell	0.50

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
SkB:						
Glynwood	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Shinrock	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.95	Depth to saturated zone	1.00	Depth to saturated zone	0.95
	Shrink-swell	0.50			Shrink-swell	0.50
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Flooding	1.00	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50			Shrink-swell	0.50
StB2:						
St. Clair	Somewhat limited		Very limited		Somewhat limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
			Shrink-swell	0.50		
StC2:						
St. Clair	Somewhat limited		Very limited		Very limited	
	Shrink-swell	0.50	Depth to saturated zone	1.00	Slope	1.00
	Slope	0.04	Shrink-swell	0.50	Shrink-swell	0.50
			Slope	0.04		
ThA:						
Thackery	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.77	Depth to saturated zone	1.00	Depth to saturated zone	0.77
			Shrink-swell	0.50		

Table 20.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
TkA:						
Tiderishi	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
TnA:						
Toledo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
ToB:						
Tuscola	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.51	Depth to saturated zone	1.00	Depth to saturated zone	0.51
TpA:						
Tuscola	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.51	Depth to saturated zone	1.00	Depth to saturated zone	0.51
TpB:						
Tuscola	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.51	Depth to saturated zone	1.00	Depth to saturated zone	0.51
TuB:						
Tuscola	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.51	Depth to saturated zone	1.00	Depth to saturated zone	0.51
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcD:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
VaA:						
Vanlue	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
VeA:						
Vaughnsville	Not limited		Somewhat limited		Not limited	
			Depth to saturated zone	0.99		
WeA:						
Rensselaer	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Westland	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50

Table 21.--Building Site Development (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Content of organic matter	1.00
	Subsidence	1.00	Cutbanks cave	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Content of organic matter	1.00		
AkA:						
Alvada--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	0.20				
AmA:						
Alvada--------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	0.20				
Urban land----------	Not rated		Not rated		Not rated	
AnA:						
Aquents-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.50				
ApB:						
Arkport-------------	Very limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Droughty	0.03
ArA:						
Aurand--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.05	Cutbanks cave	0.10		
AsA:						
Aurand--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.05	Cutbanks cave	0.10		
Urban land----------	Not rated		Not rated		Not rated	

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BgA:						
Biglick	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too clayey	0.28	Droughty	0.85
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.90
	Depth to bedrock	0.90	Too clayey	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
BgB:						
Biglick	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too clayey	0.28	Droughty	0.94
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.80
	Depth to bedrock	0.79	Too clayey	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
BnA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00				
	Shrink-swell	0.50	Cutbanks cave	0.10		
			Too clayey	0.01		
BoA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00				
	Shrink-swell	0.50	Cutbanks cave	0.10		
			Too clayey	0.01		
BoB:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00				
	Shrink-swell	0.50	Cutbanks cave	0.10		
			Too clayey	0.01		
BpA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00				
	Shrink-swell	0.50	Cutbanks cave	0.10		
			Too clayey	0.01		

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BpA:						
Houcktown	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Low strength	0.05	Cutbanks cave	0.10		
BrA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50	Too clayey	0.01		
Jenera	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Low strength	0.40	Cutbanks cave	0.10		
BuA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50	Too clayey	0.01		
Urban land	Not rated		Not rated		Not rated	
ChC:						
Channahon	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.87
	Frost action	0.50	Slope	0.04	Slope	0.04
	Slope	0.04			Content of large stones	0.01
	Low strength	0.03				
Biglick	Very limited		Very limited		Very limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Too clayey	0.28	Droughty	1.00
	Shrink-swell	0.50	Cutbanks cave	0.10	Slope	0.04
	Frost action	0.50	Slope	0.04		
	Slope	0.04				
CoA:						
Colwood	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	0.40				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CtA:						
Cygnet	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	1.00		
	Low strength	0.04	Depth to dense layer	0.50		
CuA:						
Cygnet	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	1.00		
	Low strength	0.04	Depth to dense layer	0.50		
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Low strength	0.05				
DeA:						
Del Rey	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
DfA:						
Del Rey	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.94
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.94				
	Shrink-swell	0.50				
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50	Too clayey	0.01		
DuB:						
Dunbridge	Very limited		Very limited		Somewhat limited	
	Depth to bedrock	0.84	Depth to bedrock	1.00	Depth to bedrock	0.84
	Frost action	0.50	Cutbanks cave	0.10	Droughty	0.18
	Low strength	0.03				
EmA:						
Elliott	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Shrink-swell	0.50				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
FbA:						
Flatrock------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Low strength	0.80	Flooding	0.60		
	Depth to saturated zone	0.75				
FcA:						
Flatrock------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Low strength	0.80	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				
FdA:						
Flatrock------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Low strength	0.80	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				
FoA:						
Fox-----------------	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Low strength	0.20				
FoB:						
Fox-----------------	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Low strength	0.20				
FoC2:						
Fox-----------------	Very limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Slope	0.04
	Low strength	0.20	Slope	0.04		
	Slope	0.04				
FsA:						
Fulton--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Too clayey	0.72		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
FtA:						
Fulton--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Too clayey	0.72		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
GaB:						
Gallman-------------	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Low strength	0.03				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
GfA:						
Gilford	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
GmA:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Shrink-swell	0.50				
GnB:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
GpB2:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
GpC2:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50	Slope	0.04
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Slope	0.04	Slope	0.04		
GsB:						
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50	Too clayey	0.01		

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
GsB:						
Houcktown-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Low strength	0.05	Cutbanks cave	0.10		
GuB:						
Glynwood-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
Urban land----------	Not rated		Not rated		Not rated	
HaA:						
Harrod-------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Flooding	1.00
	Flooding	1.00	Depth to bedrock	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Flooding	0.80	Depth to bedrock	0.23
	Low strength	0.40	Cutbanks cave	0.10		
	Depth to bedrock	0.23				
HkA:						
Haskins------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.04	Cutbanks cave	0.10		
			Too clayey	0.01		
HnA:						
Haskins------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to dense layer	0.50		
	Low strength	0.04	Cutbanks cave	0.10		
			Too clayey	0.01		
HpA:						
Houcktown-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Low strength	0.05	Cutbanks cave	0.10		
HpB:						
Houcktown-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Low strength	0.05	Cutbanks cave	0.10		

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HrB:						
Houcktown-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Shrink-swell	0.50				
Glynwood-----------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
Jenera-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Low strength	0.30	Cutbanks cave	0.10		
HsA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Too clayey	0.28		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
HtA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Too clayey	0.28	Too clayey	1.00
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
JeA:						
Jenera-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Low strength	0.30				
JeB:						
Jenera-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Low strength	0.30				
JfB:						
Jenera-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	0.75				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
JfB:						
Shinrock	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	1.00		
	Depth to saturated zone	0.75	Too clayey	0.02		
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Cutbanks cave	0.10	Droughty	0.01
	Low strength	0.20				
KnA:						
Knoxdale	Very limited		Somewhat limited		Somewhat limited	
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Low strength	0.80	Depth to saturated zone	0.24		
	Frost action	0.50	Cutbanks cave	0.10		
LbA:						
Lamberjack	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Cutbanks cave	1.00		
	Low strength	0.05				
LcA:						
Lamberjack	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Cutbanks cave	1.00		
	Low strength	0.05				
Urban land	Not rated		Not rated		Not rated	
LuB2:						
Lucas	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50	Too clayey	0.72		
	Frost action	0.50	Cutbanks cave	0.10		
LyE:						
Lybrand	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Low strength	1.00	Depth to saturated zone	0.53		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Cutbanks cave	0.10		
			Too clayey	0.03		
MbA:						
Medway	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Depth to saturated zone	0.75	Flooding	0.60		
	Low strength	0.40				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
McA:						
Medway--------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Depth to saturated zone	0.75	Cutbanks cave	0.10		
	Low strength	0.40				
MeA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	0.30				
MfA:						
Mermill-------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	0.30				
MgA:						
Millsdale-----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to bedrock	1.00	Depth to bedrock	0.10
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				
MnA:						
Milton--------------	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.54
	Depth to bedrock	0.54	Too clayey	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
MpD3:						
Morley--------------	Very limited		Very limited		Very limited	
	Low strength	1.00	Slope	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Cutbanks cave	0.10		
MrA:						
Morley--------------	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Cutbanks cave	0.10		

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
MsB:						
Morley	Very limited		Somewhat limited		Not limited	
	Low strength	1.00	Depth to saturated zone	0.99		
	Shrink-swell	0.50	Depth to dense layer	0.50		
	Frost action	0.50	Cutbanks cave	0.10		
Milton	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to bedrock	1.00	Depth to bedrock	0.54
	Depth to bedrock	0.54	Too clayey	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
	Frost action	0.50				
MvB:						
Mortimer	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Too clayey	0.50		
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
MwB2:						
Mortimer	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Too clayey	0.50		
	Depth to saturated zone	0.75	Depth to dense layer	0.50		
	Shrink-swell	0.50	Cutbanks cave	0.10		
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Too clayey	0.32		
	Shrink-swell	0.50	Cutbanks cave	0.10		
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Too clayey	0.32		
	Shrink-swell	0.50	Cutbanks cave	0.10		
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00	Too clayey	0.32		
	Shrink-swell	0.50	Cutbanks cave	0.10		

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00				
	Shrink-swell	0.50	Too clayey	0.32		
			Cutbanks cave	0.10		
NrA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to dense layer	0.50		
	Low strength	1.00				
	Shrink-swell	0.50	Too clayey	0.32		
			Cutbanks cave	0.10		
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
OrB:						
Oshtemo	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
OrC:						
Oshtemo	Very limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Slope	0.04
	Slope	0.04	Slope	0.04		
OsB:						
Oshtemo	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
			Depth to saturated zone	0.24		
OwB:						
Ottokee	Very limited		Very limited		Somewhat limited	
	Frost action	0.50	Cutbanks cave	1.00	Droughty	0.12
			Depth to saturated zone	0.99		
PbA:						
Patton	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
	Shrink-swell	0.50				
PmA:						
Pewamo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00	Too clayey	0.03		
	Shrink-swell	0.50				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PnA:						
Pewamo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	0.10		
	Low strength	1.00	Too clayey	0.03		
	Shrink-swell	0.50				
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Depth to bedrock	1.00	Depth to bedrock	0.84
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to bedrock	0.84				
	Shrink-swell	0.50				
RgB:						
Rawson	Very limited		Somewhat limited		Not limited	
	Frost action	0.50	Depth to saturated zone	0.99		
	Low strength	0.05	Depth to dense layer	0.50		
			Cutbanks cave	0.10		
RhA:						
Rensselaer	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	0.80				
	Shrink-swell	0.50				
RnA:						
Rimer	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Cutbanks cave	1.00	Droughty	0.01
			Depth to dense layer	0.50		
RoA:						
Rimer	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Cutbanks cave	1.00		
RtA:						
Rossburg	Very limited		Very limited		Somewhat limited	
	Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
	Frost action	0.50	Flooding	0.60		
	Low strength	0.30				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
SeA:						
Shawtown	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Low strength	0.01	Depth to saturated zone	0.99		
SeB:						
Shawtown	Very limited		Very limited		Not limited	
	Frost action	0.50	Cutbanks cave	1.00		
	Low strength	0.01	Depth to saturated zone	0.99		
SfB:						
Shinrock	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	1.00		
	Depth to saturated zone	0.75	Too clayey	0.02		
	Shrink-swell	0.50				
SgC2:						
Shinrock	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	1.00	Slope	0.04
	Depth to saturated zone	0.75	Slope	0.04		
	Shrink-swell	0.50	Too clayey	0.02		
	Slope	0.04				
SkB:						
Shinrock	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Cutbanks cave	1.00		
	Depth to saturated zone	0.75	Too clayey	0.02		
	Shrink-swell	0.50				
Glynwood	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.75
	Low strength	1.00	Depth to dense layer	0.50		
	Depth to saturated zone	0.75	Too clayey	0.12		
	Shrink-swell	0.50	Cutbanks cave	0.10		
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Flooding	1.00	Flooding	0.60	Flooding	0.60
	Low strength	1.00	Cutbanks cave	0.10		
	Depth to saturated zone	1.00				
	Shrink-swell	0.50				
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00	Flooding	0.60
	Flooding	1.00	Flooding	0.60		
	Low strength	1.00				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Flooding	0.60	Flooding	0.60
	Flooding	1.00	Cutbanks cave	0.10		
	Low strength	1.00				
StB2:						
St. Clair	Very limited		Very limited		Not limited	
	Low strength	1.00	Depth to saturated zone	1.00		
	Shrink-swell	0.50	Too clayey	0.50		
	Frost action	0.50	Depth to dense layer	0.50		
			Cutbanks cave	0.10		
StC2:						
St. Clair	Very limited		Very limited		Somewhat limited	
	Low strength	1.00	Depth to saturated zone	1.00	Slope	0.04
	Shrink-swell	0.50	Too clayey	0.50		
	Frost action	0.50	Depth to dense layer	0.50		
	Slope	0.04	Cutbanks cave	0.10		
			Slope	0.04		
ThA:						
Thackery	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.48
	Low strength	1.00	Depth to saturated zone	1.00		
	Depth to saturated zone	0.48				
TkA:						
Tiderishi	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Cutbanks cave	0.10		
	Low strength	0.20				
TnA:						
Toledo	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Too clayey	0.50		
	Low strength	1.00	Cutbanks cave	0.10		
	Shrink-swell	0.50				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ToB:						
Tuscola-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.19
	Low strength	1.00	Depth to saturated zone	1.00		
	Depth to saturated zone	0.19				
TpA:						
Tuscola-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.19
	Low strength	0.40	Depth to saturated zone	1.00		
	Depth to saturated zone	0.19				
TpB:						
Tuscola-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.19
	Low strength	0.40	Depth to saturated zone	1.00		
	Depth to saturated zone	0.19				
TuB:						
Tuscola-------------	Very limited		Very limited		Somewhat limited	
	Frost action	1.00	Cutbanks cave	1.00	Depth to saturated zone	0.19
	Low strength	0.80	Depth to saturated zone	1.00		
	Depth to saturated zone	0.19				
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	
UcD:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
VaA:						
Vanlue--------------	Very limited		Very limited		Very limited	
	Frost action	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Cutbanks cave	0.10		
	Low strength	0.40				
VeA:						
Vaughnsville--------	Very limited		Somewhat limited		Not limited	
	Frost action	0.50	Depth to saturated zone	0.99		
	Low strength	0.01	Depth to dense layer	0.50		
			Cutbanks cave	0.10		
WeA:						
Westland------------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
	Shrink-swell	0.50				
	Low strength	0.40				

Table 21.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Local roads and streets		Shallow excavations		Lawns and landscaping	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WeA:						
Rensselaer----------	Very limited		Very limited		Very limited	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Cutbanks cave	1.00		
	Low strength	1.00				
	Shrink-swell	0.50				

Table 22.--Sanitary Facilities (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:				
Adrian	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Depth to saturated zone	1.00
	Subsidence	1.00	Content of organic matter	1.00
AkA:				
Alvada	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Restricted permeability	1.00		
AmA:				
Alvada	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Restricted permeability	1.00		
Urban land	Not rated		Not rated	
AnA:				
Aquents	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00		
	Restricted permeability	1.00		
ApB:				
Arkport	Not limited		Very limited	
			Seepage	1.00
			Slope	0.33
ArA:				
Aurand	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00		
AsA:				
Aurand	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00		
Urban land	Not rated		Not rated	

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
BgA:				
Biglick	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
Milton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00		
BgB:				
Biglick	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
			Slope	0.33
Milton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to bedrock	1.00
			Slope	0.33
	Depth to bedrock	1.00		
BnA:				
Blount	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
BoA:				
Blount	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
BoB:				
Blount	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.09
	Depth to saturated zone	1.00		
BpA:				
Blount	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.01
	Depth to saturated zone	1.00		
Houcktown	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
			Depth to saturated zone	0.01
	Restricted permeability	1.00		
			Slope	0.01
BrA:				
Blount	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.01
	Depth to saturated zone	1.00		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
BrA:				
Jenera	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Depth to saturated zone	0.01
			Slope	0.01
BuA:				
Blount	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
Urban land	Not rated		Not rated	
ChC:				
Channahon	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.04	Slope	1.00
			Seepage	0.53
Biglick	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.04	Slope	1.00
CoA:				
Colwood	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.53
CtA:				
Cygnet	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Restricted permeability	0.46	Depth to saturated zone	0.01
CuA:				
Cygnet	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Restricted permeability	0.46	Depth to saturated zone	0.01
Urban land	Not rated		Not rated	
DbA:				
Darroch	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
DeA:				
Del Rey	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
DfA:				
Del Rey	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.01
	Depth to saturated zone	1.00		
Blount	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.01
	Depth to saturated zone	1.00		
DuB:				
Dunbridge	Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00
			Depth to bedrock	1.00
			Slope	0.09
EmA:				
Elliott	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
	Restricted permeability	1.00		
FbA:				
Flatrock	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
FcA:				
Flatrock	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
FdA:				
Flatrock	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
	Depth to bedrock	0.11		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
FoA:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
	Restricted permeability	0.46		
FoB:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.33
	Restricted permeability	0.46		
FoC2:				
Fox	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	1.00
	Restricted permeability	0.46		
	Slope	0.04		
FsA:				
Fulton	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
FtA:				
Fulton	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
GaB:				
Gallman	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.33
GfA:				
Gilford	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Depth to saturated zone	1.00
GmA:				
Glynwood	Very limited		Somewhat limited	
	Restricted permeability	1.00	Depth to saturated zone	0.01
	Depth to saturated zone	1.00		
	Depth to bedrock	0.22		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
GnB:				
Glynwood-----------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
GpB2:				
Glynwood-----------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
GpC2:				
Glynwood-----------	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
	Slope	0.04		
GsB:				
Glynwood-----------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.09
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
Blount-------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.01
	Depth to saturated zone	1.00		
Houcktown-----------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Slope	0.09
			Depth to saturated zone	0.01
GuB:				
Glynwood-----------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
Urban land----------	Not rated		Not rated	
HaA:				
Harrod-------------	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Restricted permeability	0.46	Seepage	0.53

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
HkA:				
Haskins	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
	Depth to saturated zone	1.00		
HnA:				
Haskins	Very limited		Somewhat limited	
	Restricted permeability	1.00	Seepage	0.53
	Depth to saturated zone	1.00		
HpA:				
Houcktown	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Depth to saturated zone	0.01
HpB:				
Houcktown	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Slope	0.33
			Depth to saturated zone	0.01
HrB:				
Houcktown	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Slope	0.09
			Depth to saturated zone	0.01
Glynwood	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.09
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
Jenera	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Slope	0.09
			Depth to saturated zone	0.01
HsA:				
Hoytville	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		
	Depth to saturated zone	1.00		
HtA:				
Hoytville	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00		
	Depth to saturated zone	1.00		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
JeA:				
Jenera	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Depth to saturated zone	0.01
JeB:				
Jenera	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Slope	0.33
			Depth to saturated zone	0.01
JfB:				
Jenera	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00	Slope	0.09
			Depth to saturated zone	0.01
Shinrock	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.28
	Restricted permeability	1.00	Slope	0.09
			Depth to saturated zone	0.01
JoA:				
Joliet	Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
			Seepage	0.53
KnA:				
Knoxdale	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	0.65	Seepage	1.00
	Restricted permeability	0.46	Depth to saturated zone	0.02
LbA:				
Lamberjack	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
	Restricted permeability	0.46		
LcA:				
Lamberjack	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
	Restricted permeability	0.46		
Urban land	Not rated		Not rated	

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
LuB2:				
Lucas	Very limited		Somewhat limited	
	Restricted permeability	1.00	Depth to saturated zone	0.96
	Depth to saturated zone	1.00	Slope	0.33
LyE:				
Lybrand	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Slope	1.00	Depth to saturated zone	0.52
	Depth to saturated zone	0.97		
MbA:				
Medway	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
McA:				
Medway	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	1.00
MeA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Seepage	0.53
	Depth to saturated zone	1.00		
MfA:				
Mermill	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Seepage	0.53
	Depth to saturated zone	1.00		
MgA:				
Millsdale	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00		
MnA:				
Milton	Very limited		Very limited	
	Restricted permeability	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
MpD3:				
Morley--------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
	Restricted permeability	1.00	Depth to saturated zone	0.96
	Slope	1.00		
MrA:				
Morley--------------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.96
	Restricted permeability	1.00		
	Depth to bedrock	0.06		
MsB:				
Morley--------------	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	0.96
	Restricted permeability	1.00	Slope	0.33
	Depth to bedrock	0.22		
Milton--------------	Very limited		Very limited	
	Restricted permeability	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Slope	0.33
MvB:				
Mortimer------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
MwB2:				
Mortimer------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
NnA:				
Nappanee------------	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
NnB:				
Nappanee------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
NpA:				
Nappanee------------	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
NpB2:				
Nappanee------------	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.33
	Depth to saturated zone	1.00		
NrA:				
Nappanee------------	Very limited		Not limited	
	Restricted permeability	1.00		
	Depth to saturated zone	1.00		
Urban land----------	Not rated		Not rated	
OrA:				
Oshtemo-------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
OrB:				
Oshtemo-------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.33
OrC:				
Oshtemo-------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	1.00
	Slope	0.04		
OsB:				
Oshtemo-------------	Very limited		Very limited	
	Filtering capacity	1.00	Seepage	1.00
			Slope	0.33
	Depth to saturated zone	0.65	Depth to saturated zone	0.02
OwB:				
Ottokee-------------	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
			Depth to saturated zone	1.00
	Filtering capacity	1.00		
			Slope	0.09
PbA:				
Patton--------------	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Seepage	0.53

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
PmA:				
Pewamo	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
PnA:				
Pewamo	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00		
Urban land	Not rated		Not rated	
Pt:				
Pits	Not rated		Not rated	
RcA:				
Randolph	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00		
RgB:				
Rawson	Very limited		Somewhat limited	
	Restricted permeability	1.00	Depth to saturated zone	0.96
	Depth to saturated zone	1.00	Seepage	0.53
			Slope	0.33
RhA:				
Rensselaer	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00		
RnA:				
Rimer	Very limited		Very limited	
	Restricted permeability	1.00	Seepage	1.00
	Depth to saturated zone	1.00		
RoA:				
Rimer	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00		
	Restricted permeability	1.00		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
RtA:				
Rossburg	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Restricted permeability	0.46	Seepage	1.00
SeA:				
Shawtown	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Depth to saturated zone	0.96
	Restricted permeability	0.46		
SeB:				
Shawtown	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Depth to saturated zone	0.96
	Restricted permeability	0.46	Slope	0.33
SfB:				
Shinrock	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Slope	0.33
	Restricted permeability	1.00	Seepage	0.28
			Depth to saturated zone	0.01
SgC2:				
Shinrock	Very limited		Very limited	
	Depth to saturated zone	1.00	Slope	1.00
	Restricted permeability	1.00	Seepage	0.28
	Slope	0.04	Depth to saturated zone	0.01
SkB:				
Shinrock	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.28
	Restricted permeability	1.00	Slope	0.09
			Depth to saturated zone	0.01
Glynwood	Very limited		Somewhat limited	
	Restricted permeability	1.00	Slope	0.09
	Depth to saturated zone	1.00	Depth to saturated zone	0.01
SmA:				
Shoals	Very limited		Very limited	
	Flooding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
SnA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.28
SoA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.28
SpA:				
Sloan	Very limited		Very limited	
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.72	Seepage	0.28
	Depth to bedrock	0.01		
StB2:				
St. Clair	Very limited		Somewhat limited	
	Restricted permeability	1.00	Depth to saturated zone	0.81
	Depth to saturated zone	1.00	Slope	0.33
StC2:				
St. Clair	Very limited		Very limited	
	Restricted permeability	1.00	Slope	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	0.81
	Slope	0.04		
ThA:				
Thackery	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Filtering capacity	1.00	Depth to saturated zone	0.06
	Restricted permeability	0.46		
TkA:				
Tiderishi	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00		

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
TnA:				
Toledo	Very limited		Very limited	
	Restricted permeability	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00		
ToB:				
Tuscola	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.33
TpA:				
Tuscola	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
TpB:				
Tuscola	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.33
TuB:				
Tuscola	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53
			Slope	0.33
UcA:				
Udorthents	Not rated		Not rated	
UcD:				
Udorthents	Not rated		Not rated	
Ur:				
Urban land	Not rated		Not rated	
VaA:				
Vanlue	Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Seepage	0.53
	Restricted permeability	1.00		
VeA:				
Vaughnsville	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00
	Restricted permeability	1.00	Depth to saturated zone	0.96
			Slope	0.01

Table 22.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Septic tank absorption fields		Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
WeA:				
Westland------------	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Filtering capacity	1.00	Seepage	0.53
	Restricted permeability	0.46		
Rensselaer----------	Very limited		Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Restricted permeability	0.46	Seepage	0.53

Table 23.--Sanitary Facilities (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	1.00
AkA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
AmA:						
Alvada	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
ApB:						
Arkport	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	0.52
ArA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Urban land	Not rated		Not rated		Not rated	
BgA:						
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
BgA:						
Milton----------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
	Too clayey	1.00			Depth to bedrock	1.00
					Hard to compact	1.00
BgB:						
Biglick---------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
Milton----------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Hard to compact	1.00
					Too clayey	0.50
BnA:						
Blount----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
BoA:						
Blount----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
BoB:						
Blount----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
BpA:						
Blount----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
Houcktown-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
BrA:						
Blount----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Jenera----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
BuA:						
Blount----------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BuA:						
Urban land----------	Not rated		Not rated		Not rated	
ChC:						
Channahon-----------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Slope	0.04	Slope	0.04	Slope	0.04
Biglick-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	1.00	Slope	0.04	Too clayey	1.00
	Slope	0.04			Hard to compact	1.00
					Slope	0.04
CoA:						
Colwood-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
CtA:						
Cygnet--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Depth to saturated zone	1.00
	Too sandy	1.00	Depth to saturated zone	1.00	Seepage	0.52
	Depth to saturated zone	1.00			Too sandy	0.50
CuA:						
Cygnet--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00			Too clayey	0.50
	Too clayey	0.50				
Urban land----------	Not rated		Not rated		Not rated	
DbA:						
Darroch-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
DeA:						
Del Rey-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
DfA:						
Del Rey-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Blount--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
DuB:						
Dunbridge	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Seepage	1.00	Depth to bedrock	1.00
	Seepage	1.00	Depth to bedrock	1.00	Seepage	0.52
EmA:						
Elliott	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
FbA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
	Seepage	1.00				
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
FdA:						
Flatrock	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Depth to bedrock	1.00				
	Seepage	1.00				
FoA:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00			Too sandy	0.50
FoB:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00			Too sandy	0.50
					Too clayey	0.50
FoC2:						
Fox	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	1.00	Slope	0.04	Too sandy	0.50
	Slope	0.04			Slope	0.04
FsA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
FtA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
GaB:						
Gallman	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Seepage	1.00	Seepage	0.52
GfA:						
Gilford	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	1.00
GmA:						
Glynwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Hard to compact	1.00
	Depth to bedrock	1.00			Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
GnB:						
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
GpB2:						
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
GpC2:						
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00	Slope	0.04	Depth to saturated zone	1.00
	Slope	0.04			Slope	0.04
GsB:						
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GuB:						
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
Urban land	Not rated		Not rated		Not rated	

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
HaA:						
Harrod	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to bedrock	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	0.50
	Too clayey	0.50				
HkA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
HnA:						
Haskins	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
HpA:						
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
HpB:						
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
HrB:						
Houcktown	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
HsA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
HtA:						
Hoytville	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
JeA:						
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
JeB:						
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
JfB:						
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
Shinrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
KnA:						
Knoxdale	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
LbA:						
Lamberjack	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00			Too clayey	0.50
	Too clayey	0.50			Gravel content	0.01
LcA:						
Lamberjack	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00			Too clayey	0.50
	Too clayey	0.50			Gravel content	0.01
Urban land	Not rated		Not rated		Not rated	
LuB2:						
Lucas	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.04	Too clayey	1.00
	Depth to saturated zone	0.68			Hard to compact	1.00
					Depth to saturated zone	0.25

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LyE:						
Lybrand	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Too clayey	1.00			Too clayey	1.00
MbA:						
Medway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
	Seepage	1.00				
McA:						
Medway	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
MgA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
	Too clayey	1.00			Depth to bedrock	1.00
					Hard to compact	1.00
MnA:						
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Hard to compact	1.00
					Too clayey	0.50
MpD3:						
Morley	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to saturated zone	0.68	Depth to saturated zone	0.04	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.25
MrA:						
Morley	Very limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	1.00	Depth to saturated zone	0.04	Too clayey	0.50
	Depth to saturated zone	0.68			Depth to saturated zone	0.25
	Too clayey	0.50				

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
MsB:						
Morley	Very limited		Somewhat limited		Somewhat limited	
	Depth to bedrock	1.00	Depth to saturated zone	0.04	Too clayey	0.50
	Depth to saturated zone	0.68			Depth to saturated zone	0.25
	Too clayey	0.50				
Milton	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Hard to compact	1.00
					Too clayey	0.50
MvB:						
Mortimer	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Hard to compact	1.00
					Depth to saturated zone	1.00
MwB2:						
Mortimer	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Hard to compact	1.00
					Depth to saturated zone	1.00
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
NrA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
Urban land	Not rated		Not rated		Not rated	

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
OrA:						
Oshtemo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
OrB:						
Oshtemo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00			Seepage	1.00
OrC:						
Oshtemo	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Slope	0.04	Slope	0.04	Slope	0.04
OsB:						
Oshtemo	Very limited		Very limited		Very limited	
	Too sandy	1.00	Seepage	1.00	Seepage	1.00
					Too sandy	0.50
OwB:						
Ottokee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
	Seepage	1.00	Seepage	1.00	Too sandy	0.50
	Too sandy	1.00			Depth to saturated zone	0.25
PbA:						
Patton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
PmA:						
Pewamo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
PnA:						
Pewamo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
	Too clayey	0.50			Hard to compact	1.00
					Too clayey	0.50

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
RgB:						
Rawson	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to saturated zone	0.68	Depth to saturated zone	0.04	Too clayey	0.50
	Too clayey	0.50			Depth to saturated zone	0.25
RhA:						
Rensselaer	Very limited		Very limited		Very limited	
	Ponding	1.00	Depth to saturated zone	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
RnA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00	Too clayey	1.00
	Too clayey	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
					Hard to compact	1.00
RoA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage	1.00	Depth to saturated zone	1.00
			Depth to saturated zone	1.00		
RtA:						
Rossburg	Very limited		Very limited		Not limited	
	Flooding	1.00	Flooding	1.00		
	Seepage	1.00				
SeA:						
Shawtown	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.04	Depth to saturated zone	0.25
	Depth to saturated zone	0.68				
SeB:						
Shawtown	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.04	Depth to saturated zone	0.25
	Depth to saturated zone	0.68				
SfB:						
Shinrock	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
SgC2:						
Shinrock	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00	Slope	0.04	Depth to saturated zone	1.00
	Slope	0.04			Slope	0.04
SkB:						
Shinrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50				

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
SkB:						
Glynwood	Very limited		Very limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	1.00	Too clayey	1.00
	Depth to saturated zone	1.00			Depth to saturated zone	1.00
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Too clayey	0.50				
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Flooding	1.00	Flooding	1.00	Ponding	1.00
	Depth to saturated zone	1.00	Ponding	1.00	Depth to saturated zone	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Too clayey	0.50
	Depth to bedrock	1.00				
StB2:						
St. Clair	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.19	Too clayey	1.00
	Depth to saturated zone	0.86			Hard to compact	1.00
					Depth to saturated zone	0.47
StC2:						
St. Clair	Very limited		Somewhat limited		Very limited	
	Too clayey	1.00	Depth to saturated zone	0.19	Too clayey	1.00
	Depth to saturated zone	0.86	Slope	0.04	Hard to compact	1.00
	Slope	0.04			Depth to saturated zone	0.47
					Slope	0.04
ThA:						
Thackery	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	0.94	Depth to saturated zone	0.96
	Depth to saturated zone	1.00			Too clayey	0.50
	Too clayey	0.50				

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TkA:						
Tiderishi	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
TnA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	1.00			Too clayey	1.00
					Hard to compact	1.00
ToB:						
Tuscola	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
TpA:						
Tuscola	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
TpB:						
Tuscola	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
TuB:						
Tuscola	Very limited		Very limited		Somewhat limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.86
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcD:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
VaA:						
Vanlue	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Too clayey	0.50			Too clayey	0.50
VeA:						
Vaughnsville	Somewhat limited		Very limited		Somewhat limited	
	Depth to saturated zone	0.68	Seepage	1.00	Depth to saturated zone	0.25
			Depth to saturated zone	0.04	Seepage	0.22
WeA:						
Westland	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Seepage	1.00				

Table 23.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Trench sanitary landfill: Rating class and limiting features	Trench sanitary landfill: Value	Area sanitary landfill: Rating class and limiting features	Area sanitary landfill: Value	Daily cover for landfill: Rating class and limiting features	Daily cover for landfill: Value
WeA:						
Rensselaer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00

Table 24.--Construction Materials (Part 1)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
AdA:				
Adrian	Poor		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.98
AkA:				
Alvada	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
AmA:				
Alvada	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
AnA:				
Aquents	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
ApB:				
Arkport	Poor		Good	
	Bottom layer	0.00	Thickest layer	0.94
	Thickest layer	0.00		
ArA:				
Aurand	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
AsA:				
Aurand	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
BgA:				
Biglick	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Milton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BgB:				
Biglick	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
BgB:				
Milton--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BnA:				
Blount--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BoA:				
Blount--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BoB:				
Blount--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BpA:				
Blount--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Houcktown-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BrA:				
Blount--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Jenera--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
BuA:				
Blount--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land----------	Not rated		Not rated	
ChC:				
Channahon-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Biglick-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
CoA:				
Colwood-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
CtA:				
Cygnet	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.41
CuA:				
Cygnet	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
DbA:				
Darroch	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
DeA:				
Del Rey	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
DfA:				
Del Rey	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Blount	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
DuB:				
Dunbridge	Fair		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.15	Thickest layer	0.00
EmA:				
Elliott	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
FbA:				
Flatrock	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
FcA:				
Flatrock	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
FdA:				
Flatrock	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
FoA:				
Fox	Fair		Fair	
	Thickest layer	0.23	Thickest layer	0.00
	Bottom layer	0.68	Bottom layer	0.23

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
FoB:				
Fox	Fair		Fair	
	Thickest layer	0.23	Thickest layer	0.00
	Bottom layer	0.68	Bottom layer	0.23
FoC2:				
Fox	Fair		Fair	
	Thickest layer	0.23	Thickest layer	0.00
	Bottom layer	0.68	Bottom layer	0.23
FsA:				
Fulton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
FtA:				
Fulton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
GaB:				
Gallman	Fair		Fair	
	Thickest layer	0.08	Thickest layer	0.00
	Bottom layer	0.60	Bottom layer	0.09
GfA:				
Gilford	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.09
	Thickest layer	0.00	Bottom layer	0.99
GmA:				
Glynwood	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
GnB:				
Glynwood	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
GpB2:				
Glynwood	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
GpC2:				
Glynwood	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
GsB:				
Glynwood	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Blount	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Houcktown	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
GuB:				
Glynwood------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land----------	Not rated		Not rated	
HaA:				
Harrod--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HkA:				
Haskins-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HnA:				
Haskins-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HpA:				
Houcktown-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HpB:				
Houcktown-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HrB:				
Houcktown-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Glynwood------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Jenera--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HsA:				
Hoytville-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
HtA:				
Hoytville-----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
JeA:				
Jenera--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
JeB:				
Jenera--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
JfB:				
Jenera--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Shinrock------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
JoA:				
Joliet--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
KnA:				
Knoxdale------------	Poor		Poor	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.00
LbA:				
Lamberjack----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
LcA:				
Lamberjack----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land----------	Not rated		Not rated	
LuB2:				
Lucas---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
LyE:				
Lybrand-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MbA:				
Medway--------------	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.23	Bottom layer	0.10
McA:				
Medway--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MeA:				
Mermill-------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
MfA:				
Mermill	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MgA:				
Millsdale	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MnA:				
Milton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MpD3:				
Morley	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MrA:				
Morley	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MsB:				
Morley	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Milton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MvB:				
Mortimer	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
MwB2:				
Mortimer	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
NnA:				
Nappanee	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
NnB:				
Nappanee	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
NpA:				
Nappanee	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
NpB2:				
Nappanee	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
NrA:				
Nappanee	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
OrA:				
Oshtemo	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.09
	Bottom layer	0.60	Bottom layer	0.90
OrB:				
Oshtemo	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.08
	Bottom layer	0.60	Bottom layer	0.90
OrC:				
Oshtemo	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.09
	Bottom layer	0.60	Bottom layer	0.90
OsB:				
Oshtemo	Fair		Fair	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.60	Thickest layer	0.30
OwB:				
Ottokee	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.19
	Thickest layer	0.00	Thickest layer	0.65
PbA:				
Patton	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
PmA:				
Pewamo	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
PnA:				
Pewamo	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Urban land	Not rated		Not rated	
Pt:				
Pits	Not rated		Not rated	
RcA:				
Randolph	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
RgB:				
Rawson--------------	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.09
RhA:				
Rensselaer----------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
RnA:				
Rimer---------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
RoA:				
Rimer---------------	Poor		Fair	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.09
RtA:				
Rossburg------------	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SeA:				
Shawtown------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SeB:				
Shawtown------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SfB:				
Shinrock------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SgC2:				
Shinrock------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SkB:				
Shinrock------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Glynwood------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
SmA:				
Shoals--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
SnA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SoA:				
Sloan	Poor		Poor	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.00	Bottom layer	0.00
SpA:				
Sloan	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
StB2:				
St. Clair	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
StC2:				
St. Clair	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
ThA:				
Thackery	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
TkA:				
Tiderishi	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
TnA:				
Toledo	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
ToB:				
Tuscola	Poor		Poor	
	Thickest layer	0.00	Bottom layer	0.00
	Bottom layer	0.00	Thickest layer	0.00
TpA:				
Tuscola	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
TpB:				
Tuscola	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
TuB:				
Tuscola	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
UcA:				
Udorthents	Not rated		Not rated	

Table 24.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Potential source of gravel		Potential source of sand	
	Rating class	Value	Rating class	Value
UcD:				
Udorthents----------	Not rated		Not rated	
Ur:				
Urban land----------	Not rated		Not rated	
VaA:				
Vanlue--------------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
VeA:				
Vaughnsville--------	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
WeA:				
Westland------------	Fair		Fair	
	Thickest layer	0.00	Thickest layer	0.00
	Bottom layer	0.77	Bottom layer	0.39
Rensselaer----------	Poor		Fair	
	Bottom layer	0.00	Thickest layer	0.00
	Thickest layer	0.00	Bottom layer	0.06

Table 25.--Construction Materials (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
AdA:				
Adrian	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Content of organic matter	0.00
AkA:				
Alvada	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00		
AmA:				
Alvada	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
Urban land	Not rated		Not rated	
AnA:				
Aquents	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.01
	Shrink-swell	0.87		
ApB:				
Arkport	Good		Poor	
			Too sandy	0.00
ArA:				
Aurand	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
AsA:				
Aurand	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
Urban land	Not rated		Not rated	
BgA:				
Biglick	Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00
	Low strength	0.00		
	Shrink-swell	0.87		
Milton	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to bedrock	0.00	Depth to bedrock	0.10
	Shrink-swell	0.87		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
BgB:				
Biglick	Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00
	Low strength	0.00		
	Shrink-swell	0.87		
Milton	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to bedrock	0.00	Depth to bedrock	0.21
	Shrink-swell	0.87		
BnA:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.97
BoA:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Hard to reclaim	0.01
	Shrink-swell	0.87	Too clayey	0.35
			Rock fragments	0.88
BoB:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.54
BpA:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.65
Houcktown	Poor		Fair	
	Low strength	0.00	Depth to saturated zone	0.14
	Depth to saturated zone	0.14	Hard to reclaim	0.35
	Shrink-swell	0.99	Rock fragments	0.50
BrA:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.20
Jenera	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Low strength	0.22		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
BuA:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.35
Urban land	Not rated		Not rated	
ChC:				
Channahon	Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00
	Shrink-swell	0.87	Slope	0.96
			Rock fragments	0.97
Biglick	Poor		Poor	
	Depth to bedrock	0.00	Depth to bedrock	0.00
	Low strength	0.00	Slope	0.96
	Shrink-swell	0.87		
CoA:				
Colwood	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.22		
CtA:				
Cygnet	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Rock fragments	0.28
CuA:				
Cygnet	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Rock fragments	0.28
Urban land	Not rated		Not rated	
DbA:				
Darroch	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
DeA:				
Del Rey	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Shrink-swell	0.87		
DfA:				
Del Rey	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to saturated zone	0.04	Depth to saturated zone	0.04
	Shrink-swell	0.87		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
DfA:				
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.29
DuB:				
Dunbridge	Poor		Fair	
	Depth to bedrock	0.00	Rock fragments	0.03
			Depth to bedrock	0.16
EmA:				
Elliott	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.91	Hard to reclaim	0.94
FbA:				
Flatrock	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Hard to reclaim	0.82
FcA:				
Flatrock	Poor		Fair	
	Low strength	0.00	Depth to saturated zone	0.14
	Depth to saturated zone	0.14		
FdA:				
Flatrock	Poor		Fair	
	Low strength	0.00	Depth to saturated zone	0.14
	Depth to saturated zone	0.14		
FoA:				
Fox	Good		Fair	
			Rock fragments	0.28
			Hard to reclaim	0.82
FoB:				
Fox	Good		Fair	
			Rock fragments	0.28
			Hard to reclaim	0.82
FoC2:				
Fox	Good		Fair	
			Rock fragments	0.28
			Hard to reclaim	0.82
			Slope	0.96
FsA:				
Fulton	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
FtA:				
Fulton	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87		
GaB:				
Gallman	Good		Fair	
			Rock fragments	0.12
GfA:				
Gilford	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
GmA:				
Glynwood	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.61
GnB:				
Glynwood	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.97
GpB2:				
Glynwood	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.65
GpC2:				
Glynwood	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.71
			Slope	0.96
GsB:				
Glynwood	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.94
Blount	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.71

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
GsB:				
Houcktown-----------	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Rock fragments	0.50
			Hard to reclaim	0.97
GuB:				
Glynwood------------	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.94
Urban land----------	Not rated		Not rated	
HaA:				
Harrod--------------	Poor		Fair	
	Depth to bedrock	0.00	Depth to saturated zone	0.14
	Depth to saturated zone	0.14	Depth to bedrock	0.77
	Low strength	0.22	Rock fragments	0.97
HkA:				
Haskins-------------	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Rock fragments	0.88
			Hard to reclaim	0.97
HnA:				
Haskins-------------	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
			Rock fragments	0.88
			Hard to reclaim	0.94
HpA:				
Houcktown-----------	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Rock fragments	0.50
			Hard to reclaim	0.90
HpB:				
Houcktown-----------	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Rock fragments	0.50
			Hard to reclaim	0.54
HrB:				
Houcktown-----------	Poor		Fair	
	Low strength	0.00	Hard to reclaim	0.01
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.98	Too clayey	0.53

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
HrB:				
Glynwood	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.94
Jenera	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Low strength	0.78		
HsA:				
Hoytville	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87		
HtA:				
Hoytville	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87		
JeA:				
Jenera	Poor		Fair	
	Low strength	0.00	Depth to saturated zone	0.14
	Depth to saturated zone	0.14		
JeB:				
Jenera	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Low strength	0.78		
JfB:				
Jenera	Poor		Fair	
	Low strength	0.00	Depth to saturated zone	0.14
	Depth to saturated zone	0.14		
Shinrock	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
JoA:				
Joliet	Poor		Poor	
	Depth to bedrock	0.00	Depth to saturated zone	0.00
	Depth to saturated zone	0.00	Depth to bedrock	0.00
			Rock fragments	0.97
KnA:				
Knoxdale	Poor		Good	
	Low strength	0.00		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value
LbA:				
Lamberjack----------	Poor		Poor	
	Depth to saturated zone	0.00	Hard to reclaim	0.00
			Depth to saturated zone	0.00
			Rock fragments	0.88
LcA:				
Lamberjack----------	Poor		Poor	
	Depth to saturated zone	0.00	Hard to reclaim	0.00
			Depth to saturated zone	0.00
			Rock fragments	0.88
Urban land----------	Not rated		Not rated	
LuB2:				
Lucas---------------	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Depth to saturated zone	0.98
	Depth to saturated zone	0.98		
LyE:				
Lybrand-------------	Poor		Poor	
	Low strength	0.00	Slope	0.00
	Slope	0.00	Too clayey	0.00
	Shrink-swell	0.87	Hard to reclaim	0.42
MbA:				
Medway--------------	Fair		Fair	
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Low strength	0.22	Rock fragments	0.97
McA:				
Medway--------------	Fair		Poor	
	Depth to saturated zone	0.14	Hard to reclaim	0.00
	Low strength	0.22	Depth to saturated zone	0.14
			Rock fragments	0.97
MeA:				
Mermill-------------	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00		
	Shrink-swell	0.99		
MfA:				
Mermill-------------	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00		
	Shrink-swell	0.99		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
MgA:				
Millsdale	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Depth to bedrock	0.00	Depth to bedrock	0.90
	Shrink-swell	0.87	Rock fragments	0.97
MnA:				
Milton	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to bedrock	0.00	Depth to bedrock	0.46
	Shrink-swell	0.87		
MpD3:				
Morley	Poor		Poor	
	Low strength	0.00	Hard to reclaim	0.00
	Shrink-swell	0.87	Slope	0.00
	Depth to saturated zone	0.98	Too clayey	0.54
			Rock fragments	0.97
			Depth to saturated zone	0.98
MrA:				
Morley	Poor		Fair	
	Low strength	0.00	Too clayey	0.03
	Shrink-swell	0.87	Hard to reclaim	0.10
	Depth to saturated zone	0.98	Rock fragments	0.97
			Depth to saturated zone	0.98
MsB:				
Morley	Poor		Fair	
	Low strength	0.00	Too clayey	0.03
	Shrink-swell	0.87	Hard to reclaim	0.84
	Depth to saturated zone	0.98	Rock fragments	0.97
			Depth to saturated zone	0.98
Milton	Poor		Fair	
	Low strength	0.00	Too clayey	0.01
	Depth to bedrock	0.00	Depth to bedrock	0.46
	Shrink-swell	0.87		
MvB:				
Mortimer	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87		
MwB2:				
Mortimer	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
NnA:				
Nappanee------------	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87	Hard to reclaim	0.84
NnB:				
Nappanee------------	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87	Hard to reclaim	0.65
NpA:				
Nappanee------------	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87		
NpB2:				
Nappanee------------	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87	Hard to reclaim	0.71
NrA:				
Nappanee------------	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87	Hard to reclaim	0.84
Urban land----------	Not rated		Not rated	
OrA:				
Oshtemo-------------	Good		Fair	
			Rock fragments	0.12
			Hard to reclaim	0.98
OrB:				
Oshtemo-------------	Good		Fair	
			Rock fragments	0.12
			Hard to reclaim	0.98
OrC:				
Oshtemo-------------	Good		Fair	
			Rock fragments	0.12
			Slope	0.96
			Hard to reclaim	0.98
OsB:				
Oshtemo-------------	Good		Fair	
			Rock fragments	0.12
			Hard to reclaim	0.98

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
OwB:				
Ottokee	Fair		Poor	
	Depth to saturated zone	0.98	Too sandy	0.00
			Depth to saturated zone	0.98
PbA:				
Patton	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.93
	Shrink-swell	0.87		
PmA:				
Pewamo	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87		
PnA:				
Pewamo	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87		
Urban land	Not rated		Not rated	
Pt:				
Pits	Not rated		Not rated	
RcA:				
Randolph	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00	Too clayey	0.01
	Depth to bedrock	0.00	Depth to bedrock	0.16
	Shrink-swell	0.91	Rock fragments	0.97
RgB:				
Rawson	Fair		Fair	
	Depth to saturated zone	0.98	Hard to reclaim	0.94
			Rock fragments	0.97
			Depth to saturated zone	0.98
RhA:				
Rensselaer	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00		
	Shrink-swell	0.94		
RnA:				
Rimer	Poor		Poor	
	Low strength	0.00	Too sandy	0.00
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.99		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value
RoA:				
Rimer	Poor		Poor	
	Low strength	0.00	Depth to saturated zone	0.00
	Depth to saturated zone	0.00		
RtA:				
Rossburg	Fair		Good	
	Low strength	0.78		
SeA:				
Shawtown	Fair		Fair	
	Depth to saturated zone	0.98	Rock fragments	0.28
			Depth to saturated zone	0.98
SeB:				
Shawtown	Fair		Fair	
	Depth to saturated zone	0.98	Rock fragments	0.28
			Depth to saturated zone	0.98
SfB:				
Shinrock	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
SgC2:				
Shinrock	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
			Slope	0.96
SkB:				
Shinrock	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
Glynwood	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Depth to saturated zone	0.14	Depth to saturated zone	0.14
	Shrink-swell	0.87	Hard to reclaim	0.20
SmA:				
Shoals	Poor		Poor	
	Low strength	0.00	Depth to saturated zone	0.00
	Depth to saturated zone	0.00		
	Shrink-swell	0.89		
SnA:				
Sloan	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00		
	Shrink-swell	0.98		

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill: Rating class and limiting features	Value	Potential source of topsoil: Rating class and limiting features	Value
SoA:				
Sloan	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.00		
	Shrink-swell	0.89		
SpA:				
Sloan	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.99		
StB2:				
St. Clair	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Depth to saturated zone	0.89
	Depth to saturated zone	0.89	Hard to reclaim	0.97
StC2:				
St. Clair	Poor		Poor	
	Low strength	0.00	Too clayey	0.00
	Shrink-swell	0.87	Depth to saturated zone	0.89
	Depth to saturated zone	0.89	Hard to reclaim	0.90
			Slope	0.96
ThA:				
Thackery	Fair		Fair	
	Depth to saturated zone	0.29	Depth to saturated zone	0.29
	Low strength	0.78		
	Shrink-swell	0.99		
TkA:				
Tiderishi	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
TnA:				
Toledo	Poor		Poor	
	Depth to saturated zone	0.00	Too clayey	0.00
	Low strength	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.87		
ToB:				
Tuscola	Poor		Fair	
	Low strength	0.00	Depth to saturated zone	0.53
	Depth to saturated zone	0.53		
TpA:				
Tuscola	Fair		Fair	
	Depth to saturated zone	0.53	Depth to saturated zone	0.53

Table 25.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Potential source of roadfill		Potential source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value
TpB:				
Tuscola	Fair		Fair	
	Depth to saturated zone	0.53	Depth to saturated zone	0.53
TuB:				
Tuscola	Fair		Fair	
	Depth to saturated zone	0.53	Depth to saturated zone	0.53
UcA:				
Udorthents	Not rated		Not rated	
UcD:				
Udorthents	Not rated		Not rated	
Ur:				
Urban land	Not rated		Not rated	
VaA:				
Vanlue	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.22		
VeA:				
Vaughnsville	Fair		Fair	
	Depth to saturated zone	0.98	Rock fragments	0.72
			Depth to saturated zone	0.98
WeA:				
Westland	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Low strength	0.22	Hard to reclaim	0.08
	Shrink-swell	0.94	Rock fragments	0.97
Rensselaer	Poor		Poor	
	Depth to saturated zone	0.00	Depth to saturated zone	0.00
	Shrink-swell	0.96		

Table 26.--Water Management (Part 1)

(The information in table indicates the dominant soil condition but does not eliminate the need for onsite invesion. The numbers in the value columns range from 0.01 to 1.00. The larger the value greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Seepage	0.98		
AkA:						
Alvada--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.19		
AmA:						
Alvada--------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.29		
Urban land----------	Not rated		Not rated		Not rated	
AnA:						
Aquents-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
ApB:						
Arkport-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Deep to water	1.00
ArA:						
Aurand--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.19		
			Thin layer	0.16		
AsA:						
Aurand--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.20		
			Thin layer	0.11		
Urban land----------	Not rated		Not rated		Not rated	
BgA:						
Biglick-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Deep to water	1.00
	Depth to bedrock	1.00	Hard to pack	0.50		
Milton--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.98	Thin layer	0.98	Deep to water	1.00
	Seepage	0.04	Hard to pack	0.43		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BgB:						
Biglick-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Deep to water	1.00
	Depth to bedrock	1.00	Hard to pack	0.50		
Milton--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.95	Thin layer	0.95	Deep to water	1.00
	Seepage	0.04	Hard to pack	0.35		
BnA:						
Blount--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.01		
BoA:						
Blount--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.02		
BoB:						
Blount--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.26		
BpA:						
Blount--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.34		
Houcktown-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.09		
			Thin layer	0.06		
BrA:						
Blount--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.06		
Jenera--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.29		
			Piping	0.24		
BuA:						
Blount--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.37		
Urban land----------	Not rated		Not rated		Not rated	

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ChC:						
Channahon	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Deep to water	1.00
	Depth to bedrock	1.00				
Biglick	Very limited		Very limited		Very limited	
	Seepage	1.00	Thin layer	1.00	Deep to water	1.00
	Depth to bedrock	1.00	Hard to pack	0.50		
CoA:						
Colwood	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.96		
CtA:						
Cygnet	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
			Seepage	0.43		
			Thin layer	0.04		
CuA:						
Cygnet	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.01		
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.98	Cutbanks cave	0.10
DeA:						
Del Rey	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.02		
DfA:						
Del Rey	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.01		
Blount	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.29		
DuB:						
Dunbridge	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Thin layer	0.96	Deep to water	1.00
	Depth to bedrock	0.96				

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EmA:						
Elliott-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.66		
FbA:						
Flatrock------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.68		
FcA:						
Flatrock------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.69		
FdA:						
Flatrock------------	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.69		
FoA:						
Fox-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.23	Deep to water	1.00
FoB:						
Fox-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.23	Deep to water	1.00
FoC2:						
Fox-----------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.23	Deep to water	1.00
FsA:						
Fulton--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Hard to pack	0.40		
FtA:						
Fulton--------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Hard to pack	0.38		
GaB:						
Gallman-------------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.09	Deep to water	1.00
GfA:						
Gilford-------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Seepage	0.99		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GmA:						
Glynwood	Somewhat limited		Very limited		Very limited	
	Seepage	0.01	Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.46		
GnB:						
Glynwood	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.19		
GpB2:						
Glynwood	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.46		
GpC2:						
Glynwood	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.42		
GsB:						
Glynwood	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.19		
Blount	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.29		
Houcktown	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.30		
			Thin layer	0.26		
GuB:						
Glynwood	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.13		
Urban land	Not rated		Not rated		Not rated	
HaA:						
Harrod	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.78	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.72			Slow refill	0.28
			Thin layer	0.78	Cutbanks cave	0.10
			Piping	0.57		
HkA:						
Haskins	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.21		
			Thin layer	0.03		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HnA:						
Haskins-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.19		
			Thin layer	0.06		
HpA:						
Houcktown-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.19		
			Thin layer	0.09		
HpB:						
Houcktown-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.12		
			Thin layer	0.11		
HrB:						
Houcktown-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.26		
			Piping	0.05		
Glynwood------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.19		
Jenera--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.50		
			Thin layer	0.01		
HsA:						
Hoytville-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
HtA:						
Hoytville-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.04	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
JeA:						
Jenera--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.31		
JeB:						
Jenera--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.36		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
JfB:						
Jenera	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.50		
Shinrock	Somewhat limited		Very limited		Very limited	
	Seepage	0.54	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.06		
JoA:						
Joliet	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.01			Slow refill	0.28
			Thin layer	1.00	Cutbanks cave	0.10
			Piping	0.88		
KnA:						
Knoxdale	Very limited		Somewhat limited		Somewhat limited	
	Seepage	1.00	Piping	0.85	Deep to water	0.99
			Seepage	0.01	Cutbanks cave	0.10
LbA:						
Lamberjack	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
LcA:						
Lamberjack	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
Urban land	Not rated		Not rated		Not rated	
LuB2:						
Lucas	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.68	Deep to water	1.00
			Hard to pack	0.38		
LyE:						
Lybrand	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.68	Thin layer	0.19	Deep to water	1.00
MbA:						
Medway	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
			Piping	0.90		
			Seepage	0.10		
McA:						
Medway	Very limited		Very limited		Somewhat limited	
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.83		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MeA:						
Mermill-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.03		
MfA:						
Mermill-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.04		
MgA:						
Millsdale-----------	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.69	Ponding	1.00	Depth to bedrock	1.00
	Seepage	0.04	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Thin layer	0.70		
MnA:						
Milton--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.88	Thin layer	0.88	Deep to water	1.00
	Seepage	0.04	Hard to pack	0.37		
MpD3:						
Morley--------------	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.03	Depth to saturated zone	0.68	Deep to water	1.00
	Seepage	0.02				
			Thin layer	0.52		
MrA:						
Morley--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.02	Depth to saturated zone	0.68	Deep to water	1.00
			Thin layer	0.26		
MsB:						
Morley--------------	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.02	Depth to saturated zone	0.68	Deep to water	1.00
			Thin layer	0.37		
Milton--------------	Somewhat limited		Somewhat limited		Very limited	
	Depth to bedrock	0.88	Thin layer	0.88	Deep to water	1.00
	Seepage	0.04	Hard to pack	0.30		
MvB:						
Mortimer------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Hard to pack	0.50		
			Thin layer	0.13		
MwB2:						
Mortimer------------	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Hard to pack	0.50		
			Thin layer	0.06		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas: Rating class and limiting features	Value	Embankments, dikes, and levees: Rating class and limiting features	Value	Aquifer-fed excavated ponds: Rating class and limiting features	Value
NnA:						
Nappanee	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.01		
NnB:						
Nappanee	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.22		
NpA:						
Nappanee	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.01		
NpB2:						
Nappanee	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.46		
			Hard to pack	0.26		
NrA:						
Nappanee	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.13		
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.90	Deep to water	1.00
OrB:						
Oshtemo	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.90	Deep to water	1.00
OrC:						
Oshtemo	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.90	Deep to water	1.00
OsB:						
Oshtemo	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Seepage	0.30	Deep to water	1.00
OwB:						
Ottokee	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Cutbanks cave	1.00
					Deep to water	0.14
			Seepage	0.65		
PbA:						
Patton	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.12		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PmA:						
Pewamo	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
PnA:						
Pewamo	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.04	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Somewhat limited		Very limited		Very limited	
	Depth to bedrock	0.96	Depth to saturated zone	1.00	Depth to bedrock	1.00
	Seepage	0.04			Slow refill	0.28
			Thin layer	0.96	Cutbanks cave	0.10
RgB:						
Rawson	Somewhat limited		Somewhat limited		Very limited	
	Seepage	0.72	Depth to saturated zone	0.68	Deep to water	1.00
			Thin layer	0.66		
			Seepage	0.09		
RhA:						
Rensselaer	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Ponding	1.00	Deep to water	1.00
			Depth to saturated zone	1.00		
			Piping	0.52		
RnA:						
Rimer	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.66		
			Thin layer	0.03		
RoA:						
Rimer	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
			Seepage	0.09		
RtA:						
Rossburg	Very limited		Very limited		Very limited	
	Seepage	1.00	Piping	1.00	Deep to water	1.00
			Seepage	0.01		
SeA:						
Shawtown	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Deep to water	1.00

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SeB:						
Shawtown	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Deep to water	1.00
SfB:						
Shinrock	Somewhat limited		Very limited		Very limited	
	Seepage	0.54	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.01		
SgC2:						
Shinrock	Somewhat limited		Very limited		Very limited	
	Seepage	0.54	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.02		
SkB:						
Shinrock	Somewhat limited		Very limited		Very limited	
	Seepage	0.54	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.03		
Glynwood	Not limited		Very limited		Very limited	
			Depth to saturated zone	1.00	Deep to water	1.00
			Thin layer	0.52		
SmA:						
Shoals	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.72	Depth to saturated zone	1.00	Slow refill	0.28
					Cutbanks cave	0.10
			Piping	0.85		
SnA:						
Sloan	Somewhat limited		Very limited		Very limited	
	Seepage	0.54	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.92		
			Seepage	0.01		
SoA:						
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.54	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.80		
			Seepage	0.01		
SpA:						
Sloan	Somewhat limited		Very limited		Somewhat limited	
	Seepage	0.54	Ponding	1.00	Slow refill	0.28
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Piping	0.93		
			Seepage	0.01		

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
StB2:						
St. Clair-----------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Deep to water	1.00
			Hard to pack	0.43		
			Thin layer	0.16		
StC2:						
St. Clair-----------	Not limited		Somewhat limited		Very limited	
			Depth to saturated zone	0.86	Deep to water	1.00
			Hard to pack	0.45		
			Thin layer	0.37		
ThA:						
Thackery------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to saturated zone	1.00	Deep to water	1.00
TkA:						
Tiderishi-----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.36		
TnA:						
Toledo--------------	Not limited		Very limited		Somewhat limited	
			Ponding	1.00	Slow refill	0.96
			Depth to saturated zone	1.00	Cutbanks cave	0.10
			Hard to pack	0.41		
ToB:						
Tuscola-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Cutbanks cave	1.00
					Slow refill	0.28
			Piping	0.66	Deep to water	0.01
TpA:						
Tuscola-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Cutbanks cave	1.00
					Slow refill	0.28
			Piping	0.74	Deep to water	0.01
TpB:						
Tuscola-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Cutbanks cave	1.00
					Slow refill	0.28
			Piping	0.74	Deep to water	0.01
TuB:						
Tuscola-------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Cutbanks cave	1.00
					Slow refill	0.28
			Piping	0.73	Deep to water	0.01
UcA:						
Udorthents----------	Not rated		Not rated		Not rated	

Table 26.--Water Management (Part 1)--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UcD:						
Udorthents----------	Not rated		Not rated		Not rated	
Ur:						
Urban land----------	Not rated		Not rated		Not rated	
VaA:						
Vanlue--------------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Depth to saturated zone	1.00	Deep to water	1.00
			Piping	0.52		
VeA:						
Vaughnsville--------	Very limited		Somewhat limited		Very limited	
	Seepage	1.00	Depth to saturated zone	0.68	Deep to water	1.00
			Piping	0.67		
			Thin layer	0.26		
WeA:						
Westland------------	Very limited		Very limited		Very limited	
	Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00		
			Seepage	0.39		
Rensselaer----------	Somewhat limited		Very limited		Very limited	
	Seepage	0.72	Ponding	1.00	Cutbanks cave	1.00
			Depth to saturated zone	1.00	Slow refill	0.28
			Piping	0.82		
			Seepage	0.06		

Table 27.--Water Management (Part 2)

(The information in this table indicates the dominant soil condition but does not eliminate the need for on-site investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AdA:						
Adrian	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
			Depth to saturated zone	1.00	Frost action	1.00
			Too sandy	1.00	Cutbanks cave	0.90
AkA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.17	Depth to saturated zone	1.00	Frost action	1.00
			Water erosion	0.17	Cutbanks cave	0.90
AmA:						
Alvada	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.17	Depth to saturated zone	1.00	Frost action	1.00
			Water erosion	0.17		
Urban land	Not rated		Not rated		Not rated	
AnA:						
Aquents	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.21	Water erosion	0.89	Percs slowly	0.22
			Restricted permeability	0.21		
ApB:						
Arkport	Somewhat limited		Very limited		Very limited	
	Water erosion	0.56	Too sandy	1.00	Cutbanks cave	0.90
	Slope	0.36	Water erosion	0.56	Slope	0.04
	Droughty	0.03	Slope	0.36		
ArA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43		
AsA:						
Aurand	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43		
Urban land	Not rated		Not rated		Not rated	

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
BgA:						
Biglick-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.74
	Water erosion	0.89	Water erosion	0.89	Percs slowly	0.40
	Droughty	0.85	Restricted permeability	0.43		
	Restricted permeability	0.43				
Milton--------------	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.30
	Depth to bedrock	1.00	Depth to bedrock	1.00	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
BgB:						
Biglick-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.78
	Droughty	0.94	Water erosion	0.89	Percs slowly	0.40
	Water erosion	0.89	Restricted permeability	0.43	Slope	0.04
	Restricted permeability	0.43	Slope	0.36		
	Slope	0.36				
Milton--------------	Very limited		Very limited		Slightly limited	
	Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.23
	Depth to bedrock	1.00	Depth to bedrock	1.00	Percs slowly	0.22
	Slope	0.36	Slope	0.36	Slope	0.04
	Restricted permeability	0.21	Restricted permeability	0.21		
BnA:						
Blount--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
BoA:						
Blount--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
BoB:						
Blount--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.16	Slope	0.16		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BpA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.04	Slope	0.04		
Houcktown	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43		
	Slope	0.04	Slope	0.04		
BrA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.04	Slope	0.04		
Jenera	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
	Slope	0.04	Slope	0.04		
BuA:						
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
Urban land	Not rated		Not rated		Not rated	
ChC:						
Channahon	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	0.96
	Slope	1.00	Slope	1.00	Depth to bedrock	0.78
	Water erosion	0.89	Water erosion	0.89		
	Droughty	0.87	Content of large stones	0.77		
	Content of large stones	0.77				
Biglick	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	0.96
	Slope	1.00	Slope	1.00	Depth to bedrock	0.82
	Droughty	1.00	Water erosion	0.89	Percs slowly	0.40
	Water erosion	0.89	Restricted permeability	0.43		
	Restricted permeability	0.43				

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CoA:						
Colwood	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Ponding	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Frost action	1.00
CtA:						
Cygnet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56		
CuA:						
Cygnet	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56		
Urban land	Not rated		Not rated		Not rated	
DbA:						
Darroch	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00		
DeA:						
Del Rey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
DfA:						
Del Rey	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.04	Slope	0.04		
Blount	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.04	Slope	0.04		
DuB:						
Dunbridge	Very limited		Very limited		Slightly limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.26
	Droughty	0.18	Slope	0.16		
	Slope	0.16	Water erosion	0.01		
	Water erosion	0.01				

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
EmA:						
Elliott	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
FbA:						
Flatrock	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Flooding	0.90
FcA:						
Flatrock	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.90
FdA:						
Flatrock	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.90
FoA:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	0.90
FoB:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Cutbanks cave	0.90
	Slope	0.36	Slope	0.36	Slope	0.04
FoC2:						
Fox	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Slope	1.00	Slope	1.00	Cutbanks cave	0.90
FsA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
FtA:						
Fulton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
GaB:						
Gallman	Somewhat limited		Somewhat limited		Slightly limited	
	Water erosion	0.89	Water erosion	0.89	Slope	0.04
	Slope	0.36	Slope	0.36		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GfA:						
Gilford-------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
					Frost action	1.00
	Water erosion	0.01	Too sandy	1.00	Cutbanks cave	0.90
			Water erosion	0.01		
GmA:						
Glynwood------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
GnB:						
Glynwood------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
					Slope	0.04
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.36	Slope	0.36		
GpB2:						
Glynwood------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
					Slope	0.04
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.36	Slope	0.36		
GpC2:						
Glynwood------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Depth to saturated zone	1.00	Slope	0.96
	Depth to saturated zone	1.00			Percs slowly	0.91
			Slope	1.00		
	Restricted permeability	0.96	Restricted permeability	0.96		
GsB:						
Glynwood------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.16	Slope	0.16		
Blount--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
			Depth to saturated zone	1.00	Percs slowly	0.91
	Water erosion	1.00				
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.04	Slope	0.04		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GsB:						
Houcktown----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43		
	Slope	0.16	Slope	0.16		
GuB:						
Glynwood-----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	0.04
	Slope	0.36	Slope	0.36		
Urban land----------	Not rated		Not rated		Not rated	
HaA:						
Harrod-------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to bedrock	1.00	Flooding	0.60
	Water erosion	0.56	Water erosion	0.56	Depth to bedrock	0.06
HkA:						
Haskins------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Percs slowly	0.94
	Water erosion	0.56	Water erosion	0.56		
HnA:						
Haskins------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.94
	Restricted permeability	0.98	Restricted permeability	0.98		
HpA:						
Houcktown----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43		
HpB:						
Houcktown----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43	Slope	0.04
	Slope	0.36	Slope	0.36		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HrB:						
Houcktown-----------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Restricted permeability	0.43		
	Slope	0.16	Slope	0.16		
Glynwood------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.16	Slope	0.16		
Jenera--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89		
	Slope	0.16	Slope	0.16		
HsA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.56	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.21	Water erosion	0.56	Percs slowly	0.22
			Restricted permeability	0.21		
HtA:						
Hoytville-----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.56	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.21	Water erosion	0.56	Percs slowly	0.22
			Restricted permeability	0.21		
JeA:						
Jenera--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
JeB:						
Jenera--------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Slope	0.04
	Slope	0.36	Slope	0.36		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
JfB:						
Jenera--------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
	Slope	0.16	Slope	0.16		
Shinrock------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
	Slope	0.16	Slope	0.16		
JoA:						
Joliet--------------	Very limited		Very limited		Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock	0.58
	Water erosion	0.89	Water erosion	0.89		
	Droughty	0.01				
KnA:						
Knoxdale------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Deep to water	1.00
					Flooding	0.90
LbA:						
Lamberjack----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56		
LcA:						
Lamberjack----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56		
Urban land----------	Not rated		Not rated		Not rated	
LuB2:						
Lucas---------------	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Percs slowly	0.94
	Restricted permeability	0.98	Depth to saturated zone	1.00	Slope	0.04
	Slope	0.36	Restricted permeability	0.98		
	Depth to saturated zone	0.25	Slope	0.36		
LyE:						
Lybrand-------------	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Deep to water	1.00
	Restricted permeability	0.96	Restricted permeability	0.96	Percs slowly	0.91

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MbA:						
Medway	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Flooding	0.90
McA:						
Medway	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Flooding	0.90
MeA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		0.98	Depth to saturated zone	1.00	Frost action	1.00
	Restricted permeability	0.98	Restricted permeability	0.98	Percs slowly	0.94
	Water erosion	0.56	Water erosion	0.56		
MfA:						
Mermill	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Ponding	1.00
	Water erosion	1.00	Ponding	1.00	Frost action	1.00
	Restricted permeability	0.98	Depth to saturated zone	1.00	Percs slowly	0.94
			Restricted permeability	0.98		
MgA:						
Millsdale	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Depth to bedrock	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Depth to bedrock	1.00	Percs slowly	0.22
	Restricted permeability	0.21	Water erosion	0.56	Depth to bedrock	0.02
			Restricted permeability	0.21		
MnA:						
Milton	Very limited		Very limited		Slightly limited	
	Water erosion	1.00	Water erosion	1.00	Percs slowly	0.22
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.14
	Restricted permeability	0.21	Restricted permeability	0.21		
MpD3:						
Morley	Very limited		Very limited		Very limited	
	Slope	1.00	Water erosion	1.00	Slope	1.00
	Water erosion	1.00	Slope	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Depth to saturated zone	1.00		
	Depth to saturated zone	0.25	Restricted permeability	0.43		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MrA:						
Morley	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Depth to saturated zone	1.00		
	Depth to saturated zone	0.25	Restricted permeability	0.43		
MsB:						
Morley	Very limited		Very limited		Somewhat limited	
	Water erosion	1.00	Water erosion	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Depth to saturated zone	1.00	Slope	0.04
	Slope	0.36	Restricted permeability	0.43		
	Depth to saturated zone	0.25	Slope	0.36		
Milton	Very limited		Very limited		Slightly limited	
	Water erosion	1.00	Water erosion	1.00	Percs slowly	0.22
	Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	0.14
	Slope	0.36	Slope	0.36	Slope	0.04
	Restricted permeability	0.21	Restricted permeability	0.21		
MvB:						
Mortimer	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	0.04
	Slope	0.36	Slope	0.36		
MwB2:						
Mortimer	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	0.04
	Slope	0.36	Slope	0.36		
NnA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
NnB:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	0.04
	Slope	0.36	Slope	0.36		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NpA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
NpB2:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96	Slope	0.04
	Slope	0.36	Slope	0.36		
NrA:						
Nappanee	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Frost action	1.00
	Water erosion	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
Urban land	Not rated		Not rated		Not rated	
OrA:						
Oshtemo	Slightly limited		Slightly limited		Very limited	
	Water erosion	0.17	Water erosion	0.17	Cutbanks cave	0.90
OrB:						
Oshtemo	Somewhat limited		Very limited		Very limited	
	Slope	0.36	Too sandy	1.00	Cutbanks cave	0.90
	Water erosion	0.17	Slope	0.36	Slope	0.04
			Water erosion	0.17		
OrC:						
Oshtemo	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	0.96
	Water erosion	0.17	Water erosion	0.17	Cutbanks cave	0.90
OsB:						
Oshtemo	Somewhat limited		Somewhat limited		Very limited	
	Slope	0.36	Slope	0.36	Deep to water	1.00
	Water erosion	0.17	Water erosion	0.17	Cutbanks cave	0.90
					Slope	0.04
OwB:						
Ottokee	Somewhat limited		Very limited		Very limited	
	Depth to saturated zone	0.25	Depth to saturated zone	1.00	Cutbanks cave	0.90
	Slope	0.16	Slope	0.16		
	Droughty	0.12				
PbA:						
Patton	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Ponding	1.00
	Water erosion	1.00	Ponding	1.00	Frost action	1.00
			Depth to saturated zone	1.00		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains: Rating class and limiting features	Value	Constructing terraces and diversions: Rating class and limiting features	Value	Drainage: Rating class and limiting features	Value
PmA:						
Pewamo	Very limited Depth to saturated zone Water erosion Restricted permeability	 1.00 0.89 0.21	Very limited Ponding Depth to saturated zone Water erosion Restricted permeability	 1.00 1.00 0.89 0.21	Very limited Ponding Frost action Percs slowly	 1.00 1.00 0.22
PnA:						
Pewamo	Very limited Depth to saturated zone Water erosion Restricted permeability	 1.00 0.89 0.21	Very limited Ponding Depth to saturated zone Water erosion Restricted permeability	 1.00 1.00 0.89 0.21	Very limited Ponding Frost action Percs slowly	 1.00 1.00 0.22
Urban land	Not rated		Not rated		Not rated	
Pt:						
Pits	Not rated		Not rated		Not rated	
RcA:						
Randolph	Very limited Depth to saturated zone Water erosion Depth to bedrock Restricted permeability	 1.00 1.00 1.00 0.21	Very limited Water erosion Depth to saturated zone Depth to bedrock Restricted permeability	 1.00 1.00 1.00 0.21	Very limited Frost action Depth to bedrock Percs slowly	 1.00 0.26 0.22
RgB:						
Rawson	Somewhat limited Restricted permeability Water erosion Slope Depth to saturated zone	 0.98 0.89 0.36 0.25	Very limited Depth to saturated zone Restricted permeability Water erosion Slope	 1.00 0.98 0.89 0.36	Very limited Percs slowly Slope	 0.94 0.04
RhA:						
Rensselaer	Very limited Depth to saturated zone Water erosion	 1.00 1.00	Very limited Water erosion Ponding Depth to saturated zone	 1.00 1.00 1.00	Very limited Ponding Frost action	 1.00 1.00
RnA:						
Rimer	Very limited Depth to saturated zone Restricted permeability Droughty Water erosion	 1.00 0.96 0.01 0.01	Very limited Depth to saturated zone Restricted permeability Water erosion	 1.00 0.96 0.01	Very limited Frost action Percs slowly Cutbanks cave	 1.00 0.91 0.90

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoA:						
Rimer	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
					Cutbanks cave	0.90
RtA:						
Rossburg	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Flooding	0.90
SeA:						
Shawtown	Somewhat limited		Very limited		Very limited	
	Water erosion	0.56	Depth to saturated zone	1.00	Cutbanks cave	0.90
	Depth to saturated zone	0.25	Water erosion	0.56		
SeB:						
Shawtown	Somewhat limited		Very limited		Very limited	
	Water erosion	0.56	Depth to saturated zone	1.00	Cutbanks cave	0.90
	Slope	0.36	Water erosion	0.56	Slope	0.04
	Depth to saturated zone	0.25	Slope	0.36		
SfB:						
Shinrock	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.22
	Slope	0.36	Slope	0.36	Slope	0.04
	Restricted permeability	0.21	Restricted permeability	0.21		
SgC2:						
Shinrock	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Slope	1.00	Depth to saturated zone	1.00	Slope	0.96
	Depth to saturated zone	1.00	Slope	1.00	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
SkB:						
Shinrock	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		
	Slope	0.16	Slope	0.16		
Glynwood	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Restricted permeability	0.96		
	Slope	0.16	Slope	0.16		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SmA:						
Shoals	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Flooding	0.90
SnA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
			Water erosion	0.89	Flooding	0.90
SoA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
			Water erosion	0.89	Flooding	0.90
SpA:						
Sloan	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
			Water erosion	0.89	Flooding	0.90
StB2:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Depth to saturated zone	1.00	Slope	0.04
	Depth to saturated zone	0.47	Restricted permeability	0.96		
	Slope	0.36	Slope	0.36		
StC2:						
St. Clair	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Slope	0.96
	Slope	1.00	Slope	1.00	Percs slowly	0.91
	Restricted permeability	0.96	Depth to saturated zone	1.00		
	Depth to saturated zone	0.47	Restricted permeability	0.96		
ThA:						
Thackery	Very limited		Very limited		Very limited	
	Water erosion	1.00	Water erosion	1.00	Frost action	1.00
	Depth to saturated zone	0.96	Depth to saturated zone	1.00	Cutbanks cave	0.90
TkA:						
Tiderishi	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Water erosion	0.56		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TnA:						
Toledo	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Restricted permeability	0.96	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.56	Restricted permeability	0.96	Percs slowly	0.91
			Water erosion	0.56		
ToB:						
Tuscola	Somewhat limited		Very limited		Very limited	
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	0.86	Water erosion	0.89	Slope	0.04
	Slope	0.36	Slope	0.36		
TpA:						
Tuscola	Somewhat limited		Very limited		Very limited	
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	0.86	Water erosion	0.89		
TpB:						
Tuscola	Somewhat limited		Very limited		Very limited	
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	0.86	Water erosion	0.89	Slope	0.04
	Slope	0.36	Slope	0.36		
TuB:						
Tuscola	Somewhat limited		Very limited		Very limited	
	Water erosion	0.89	Depth to saturated zone	1.00	Frost action	1.00
	Depth to saturated zone	0.86	Water erosion	0.89	Slope	0.04
	Slope	0.36	Slope	0.36		
UcA:						
Udorthents	Not rated		Not rated		Not rated	
UcD:						
Udorthents	Not rated		Not rated		Not rated	
Ur:						
Urban land	Not rated		Not rated		Not rated	
VaA:						
Vanlue	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Frost action	1.00
	Water erosion	0.89	Water erosion	0.89	Percs slowly	0.22
	Restricted permeability	0.21	Restricted permeability	0.21		

Table 27.--Water Management (Part 2)--Continued

Map symbol and soil name	Constructing grassed waterways and surface drains		Constructing terraces and diversions		Drainage	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeA:						
Vaughnsville--------	Somewhat limited		Very limited		Somewhat limited	
	Water erosion	0.89	Depth to saturated zone	1.00	Percs slowly	0.40
	Restricted permeability	0.43	Water erosion	0.89		
	Depth to saturated zone	0.25	Restricted permeability	0.43		
	Slope	0.04	Slope	0.04		
WeA:						
Westland------------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
	Water erosion	0.56	Depth to saturated zone	1.00	Frost action	1.00
			Water erosion	0.56	Cutbanks cave	0.90
Rensselaer----------	Very limited		Very limited		Very limited	
	Depth to saturated zone	1.00	Water erosion	1.00	Ponding	1.00
	Water erosion	1.00	Ponding	1.00	Frost action	1.00
			Depth to saturated zone	1.00		

Table 28.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AdA:												
Adrian----------	0-26	Muck	PT	A-8	---	---	---	---	---	---	---	---
	26-80	Sand, loamy sand, loamy fine sand	SM, SP	A-1, A-2-4, A-3	0	0	80-100	60-100	35-75	0-30	0-20	NP-5
AkA:												
Alvada----------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	85-100	70-95	50-75	25-40	5-20
	10-39	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-4, A-6, A-7	0	0	85-100	80-100	70-95	30-75	25-45	9-25
	39-46	Gravelly loam, gravelly clay loam	CL, GC, SC	A-2, A-4, A-6	0	0-5	60-100	60-75	35-70	30-60	25-45	9-25
	46-50	Loam, very gravelly loamy sand, very gravelly sandy loam	GM, GP-GM, SM, SP-SM	A-1-b, A-2, A-3, A-4	0	0-5	60-100	30-75	30-70	5-50	0-30	NP-15
	50-80	Loam, clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	90-100	90-100	80-100	50-90	30-45	10-25
AmA:												
Alvada----------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	85-100	70-95	50-75	25-40	5-20
	11-42	Clay loam, loam, sandy clay loam	CL, SC	A-2, A-4, A-6, A-7	0	0	85-100	80-100	70-95	30-75	25-45	9-25
	42-46	Gravelly loam, gravelly clay loam	CL, GC, SC	A-2, A-4, A-6	0	0-5	60-100	60-75	35-70	30-60	25-45	9-25
	46-53	Gravelly loamy sand, loam, very gravelly sandy loam	GM, GP-GM, SM, SP-SM	A-1-b, A-2, A-3, A-4	0	0-5	60-100	30-75	30-70	5-50	0-30	NP-15
	53-80	Loam, clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	90-100	90-100	80-100	50-90	30-45	10-25
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
AnA:												
Aquents---------	0-6	Silty clay loam	CL	A-6, A-7	0	0-5	90-100	85-100	75-100	70-95	35-50	15-30
	6-30	Clay loam, silty clay loam, silty clay	CH, CL	A-7, A-6	0	0-5	95-100	85-100	75-100	60-95	35-60	15-35
	30-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	75-100	75-100	70-90	30-50	10-30
ApB:												
Arkport---------	0-10	Loamy fine sand	SM, SC	A-2, A-4	0	0	95-100	85-100	65-85	20-45	0-25	NP-10
	10-15	Loamy fine sand	SM, SC	A-2, A-4	0	0	95-100	85-100	70-95	20-45	0-25	NP-10
	15-69	Fine sand, loamy fine sand, fine sandy loam	ML, SM, SC	A-2, A-4	0	0	95-100	85-100	65-95	20-55	0-25	NP-10
	69-80	Sand, fine sand, loamy very fine sand	SM	A-2, A-4	0	0	95-100	85-100	60-95	15-50	0-15	NP-5
ArA:												
Aurand----------	0-11	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	11-29	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-2, A-6, A-7	0	0	90-100	80-100	75-95	25-75	25-45	5-25
	29-33	Silty clay loam, loam, sandy loam	CL, SC, CL-ML	A-2, A-4, A-6	0	0-1	90-100	70-100	60-95	30-85	20-45	5-25
	33-48	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	55-95	30-50	10-30
	48-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	55-95	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
AsA:												
Aurand----------	0-10	Loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	95-100	85-100	65-100	45-75	20-40	5-20
	10-26	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-2, A-6, A-7	0	0	90-100	80-100	75-95	25-75	25-45	5-25
	26-35	Silty clay loam, loam, sandy loam	CL, SC, CL-ML	A-2, A-4, A-6	0	0-1	90-100	70-100	60-95	30-85	25-45	5-25
	35-50	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	55-95	30-50	10-30
	50-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	55-95	30-50	10-30
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
BgA:												
Biglick---------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	55-75	25-40	5-20
	10-14	Clay, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	80-100	75-100	70-95	40-70	20-40
	14-16	Unweathered bedrock			---	---	---	---	---	---	---	---
Milton----------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	55-75	20-40	5-20
	10-14	Silty clay loam, clay loam, clay	CH, CL	A-6, A-7	0	0	95-100	80-100	75-100	70-95	40-60	20-35
	14-24	Clay, silty clay	CH, CL	A-6, A-7	0	0-3	95-100	80-100	75-95	70-95	40-70	20-40
	24-26	Unweathered bedrock			---	---	---	---	---	---	---	---
BgB:												
Biglick---------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	55-75	25-40	5-20
	9-13	Clay, silty clay, clay loam	CH, CL	A-6, A-7	0	0-3	95-100	80-100	75-100	70-95	40-70	20-40
	13-15	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
BgB:												
Milton----------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	55-75	20-40	5-20
	8-20	Silty clay loam, clay loam, clay	CH, CL	A-6, A-7	0	0	95-100	80-100	75-100	70-95	40-60	20-35
	20-26	Clay, silty clay	CH, CL	A-7, A-6	0	0-3	95-100	80-100	75-100	70-95	40-70	20-40
	26-28	Unweathered bedrock			---	---	---	---	---	---	---	---
BnA:												
Blount----------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	80-100	50-70	25-40	5-20
	10-37	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	37-56	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	56-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
BoA:												
Blount----------	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	90-100	80-95	25-35	5-15
	9-21	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	21-55	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	55-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
BoB:												
Blount----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	90-100	80-95	25-35	5-15
	8-30	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	30-45	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	45-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
BpA:												
Blount----------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	80-100	50-70	25-40	5-20
	9-31	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	31-43	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	43-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
Houcktown-------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	65-100	50-70	20-30	5-15
	9-28	Clay loam, loam, gravelly sandy clay loam	CL, SC, CL-ML	A-2, A-4, A-6, A-7	0	0-1	95-100	60-100	50-85	25-75	25-45	5-25
	28-52	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-50	10-30
	52-80	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
BrA:												
Blount----------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	80-100	50-70	25-40	5-20
	9-26	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	26-52	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	52-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
Jenera----------	0-9	Fine sandy loam	SC, SC-SM	A-4, A-6	0	0	100	95-100	65-95	30-45	20-30	5-15
	9-31	Sandy clay loam, clay loam, loam	CL, SC, CL-ML	A-7, A-6, A-4	0	0	100	95-100	75-100	40-80	25-45	5-25
	31-44	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	70-95	20-45	5-25
	44-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25
BuA:												
Blount----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	90-100	80-95	25-35	5-15
	10-28	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	28-42	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	42-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
ChC:												
Channahon-------	0-7	Loam	CL, CL-ML	A-4, A-6	0-3	0-10	95-100	75-100	70-90	50-70	25-40	5-20
	7-13	Channery loam, channery clay loam	SC, CL	A-6, A-7, A-2	0-5	5-30	70-95	50-75	30-70	25-50	30-45	10-25
	13-15	Unweathered bedrock			---	---	---	---	---	---	---	---
Biglick---------	0-7	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	55-75	25-40	5-20
	7-12	Clay, silty clay, clay loam	CH, CL	A-6, A-7	0	0-3	95-100	80-100	75-100	70-95	40-70	20-40
	12-14	Unweathered bedrock			---	---	---	---	---	---	---	---
CoA:												
Colwood---------	0-11	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	50-75	15-37	NP-15
	11-56	Loam, clay loam, fine sandy loam	CL, SC, CL-ML	A-4, A-6, A-7	0	0	100	95-100	80-100	35-90	25-45	5-25
	56-80	Stratified fine sand to silt loam	CL, ML, SC, SM	A-2, A-4	0	0	100	95-100	70-100	10-80	0-30	NP-10
CtA:												
Cygnet----------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-100	40-70	20-30	5-15
	11-30	Clay loam, loam, gravelly clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7, A-2	0	0	80-100	55-100	50-100	20-70	25-45	5-25
	30-53	Loam, sandy loam, very gravelly loamy coarse sand	CL, ML, SC, SM	A-2, A-4, A-6	0	0	80-100	55-100	45-85	10-65	0-35	NP-15
	53-80	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
CuA:												
Cygnet----------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-100	40-70	20-30	5-15
	10-42	Clay loam, loam, gravelly clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6, A-7, A-2	0	0	80-100	55-100	50-100	20-70	25-45	5-25
	42-57	Loam, sandy loam, very gravelly loamy coarse sand	CL, ML, SC, SM	A-2, A-4, A-6	0	0	80-100	55-100	45-85	10-65	0-35	NP-15
	57-80	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
DbA:												
Darroch---------	0-11	Loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	55-75	20-30	3-15
	11-44	Clay loam, sandy clay loam, fine sandy loam	CL, SC, SM, CL-ML, ML	A-2-4, A-4, A-6, A-7	0	0	95-100	95-100	80-95	25-75	25-45	3-25
	44-80	Stratified loam to silt loam	CL, ML, SC, SM	A-4, A-6	0	0	95-100	75-100	55-100	35-90	0-30	NP-15
DeA:												
Del Rey---------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-95	20-40	5-20
	10-37	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	90-100	85-95	40-55	16-30
	37-80	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	75-95	30-45	8-25
DfA:												
Del Rey---------	0-9	Silt loam	CL, CL-ML	A-6	0	0	100	100	90-100	70-95	20-40	5-20
	9-41	Silty clay loam, silty clay	CH, CL	A-7	0	0	100	100	90-100	85-95	40-55	16-30
	41-80	Silt loam, silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	75-95	30-45	8-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
DfA:												
Blount----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	90-100	80-95	25-35	5-15
	8-27	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	27-44	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	44-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
DuB:												
Dunbridge-------	0-8	Loamy fine sand	SM, SP-SM	A-2, A-4	0	0-5	90-100	90-100	55-80	10-40	0-15	NP-5
	8-25	Loam, clay loam, gravelly fine sandy loam	CL, ML, SC, SM, CL-ML	A-2, A-4, A-6, A-1-b	0-1	0-5	75-95	50-95	35-90	20-75	20-40	3-20
	25-27	Unweathered bedrock			---	---	---	---	---	---	---	---
EmA:												
Elliott---------	0-12	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	90-100	75-100	25-40	5-20
	12-36	Silty clay, silty clay loam, clay	CH, CL	A-6, A-7	0	0-5	95-100	85-100	80-100	75-100	35-60	15-35
	36-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	90-100	85-100	80-100	50-95	30-50	10-30
FbA:												
Flatrock--------	0-9	Loam	CL, CL-ML, ML	A-6, A-4	0	0	100	90-100	80-95	60-75	20-40	3-20
	9-44	Silt loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	90-100	85-100	60-90	20-45	3-25
	44-80	Stratified gravelly loam to silt loam	CL, ML, SM, CL-ML	A-4, A-6	0	0-5	95-100	60-75	35-70	20-60	20-45	3-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
FcA:												
Flatrock--------	0-11	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	90-100	85-100	70-90	20-40	3-20
	11-52	Silt loam, loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	90-100	85-100	60-90	20-45	3-25
	52-80	Stratified coarse sandy loam to loam	CL, ML, SM, CL-ML	A-4, A-6	0	0	100	75-100	60-90	30-80	20-45	3-25
FdA:												
Flatrock--------	0-11	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	90-100	85-100	70-90	20-40	3-20
	11-52	Silt loam, loam, silty clay loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	90-100	85-100	60-90	20-45	3-25
	52-64	Stratified coarse sandy loam to loam	CL, ML, SM, CL-ML	A-4, A-6	0	0	100	75-100	60-90	30-80	20-45	3-25
	64-66	Unweathered bedrock			---	---	---	---	---	---	---	---
FoA:												
Fox-------------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	75-95	70-90	40-60	20-30	5-18
	9-30	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC, CL-ML	A-2, A-6, A-7, A-4	0-1	0-5	65-100	55-100	30-100	30-80	25-45	5-25
	30-80	Loamy coarse sand, gravelly loamy coarse sand, coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-10	40-100	35-100	10-75	2-20	0-15	NP-5
FoB:												
Fox-------------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	75-95	70-90	40-60	20-30	5-18
	9-37	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC, CL-ML	A-2, A-6, A-7, A-4	0-1	0-5	65-100	55-100	30-100	30-80	25-45	5-25
	37-80	Loamy coarse sand, gravelly loamy coarse sand, coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-10	40-100	35-100	10-75	2-20	0-15	NP-5

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
FoC2:												
Fox-------------	0-6	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	75-95	70-90	40-60	20-30	5-18
	6-32	Clay loam, sandy clay loam, gravelly loam	CL, GC, SC, CL-ML	A-2, A-4, A-7, A-6	0-1	0-5	65-100	55-100	30-100	30-80	25-45	5-25
	32-80	Loamy coarse sand, gravelly loamy coarse sand, coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-2, A-3	0-3	0-10	40-100	35-100	10-75	2-20	0-15	NP-5
FsA:												
Fulton----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	70-90	25-40	5-20
	8-42	Silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	90-100	85-100	40-70	19-40
	42-60	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	85-100	37-70	17-40
	60-80	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	85-100	37-70	17-40
FtA:												
Fulton----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	70-90	25-40	5-20
	10-25	Silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	90-100	85-100	40-70	19-40
	25-45	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	85-100	37-70	17-40
	45-68	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	90-100	85-100	37-70	17-40
	68-80	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	75-100	65-100	45-90	30-50	10-30
GaB:												
Gallman---------	0-10	Loam	CL-ML, CL	A-4, A-6	0	0	90-100	75-100	65-100	40-70	20-35	5-15
	10-61	Loam, gravelly loam, gravelly sandy loam	CL, CL-ML, SC, GC	A-2, A-4, A-6, A-7	0	0	75-100	55-95	40-95	20-70	25-45	5-20
	61-80	Loamy sand, very gravelly sand, gravelly sandy loam	GM, GP-GM, SM, SP-SM	A-1, A-2, A-3	0	0	60-100	45-95	30-75	5-30	0-25	NP-10

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
GfA:												
Gilford---------	0-12	Mucky loam	CL, CL-ML, SC	A-4, A-6	0	0	95-100	95-100	55-95	45-70	20-30	3-15
	12-27	Loam, sandy loam, fine sandy loam	SC, SM, ML, CL-ML	A-2-4, A-4, A-6	0	0	95-100	95-100	55-85	25-55	20-30	3-15
	27-36	Loamy sand, loamy fine sand	SM, SP, SP-SM	A-1-b, A-2-4, A-3	0	0	95-100	95-100	45-90	4-15	0-25	NP-10
	36-80	Sand, loamy sand, fine sand	SM, SP, SP-SM	A-1-b, A-2-4, A-3	0	0	95-100	95-100	5-75	0-15	0-25	NP-10
GmA:												
Glynwood--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	50-70	25-40	5-20
	10-31	Clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	31-40	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	40-61	Clay loam, silty clay loam, loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-45	10-25
	61-63	Unweathered bedrock			---	---	---	---	---	---	---	---
GnB:												
Glynwood--------	0-9	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	60-90	25-40	5-20
	9-37	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	37-47	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	47-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
GpB2:												
Glynwood--------	0-7	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	90-100	80-100	70-95	35-50	15-30
	7-31	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	31-40	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	40-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
GpC2:												
Glynwood--------	0-6	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	90-100	80-100	70-95	30-50	15-30
	6-32	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	32-41	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	41-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
GsB:												
Glynwood--------	0-7	Clay loam	CL	A-6, A-7	0	0-2	95-100	90-100	80-100	65-85	30-50	15-30
	7-36	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	36-47	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	47-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
GsB:												
Blount----------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	80-100	50-70	25-40	5-15
	8-32	Clay loam, silty clay, silty clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	70-90	60-90	35-55	15-35
	32-44	Silty clay loam, clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	44-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
Houcktown-------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	65-100	50-70	20-30	5-15
	9-37	Loam, clay loam, gravelly sandy clay loam	CL, SC	A-2, A-4, A-6, A-7	0	0-1	95-100	60-100	50-85	25-75	25-45	5-25
	37-45	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-50	10-30
	45-80	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25
GuB:												
Glynwood--------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	60-90	25-40	5-20
	10-36	Silty clay, silty clay loam, clay	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	36-49	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	49-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HaA:												
Harrod----------	0-13	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	70-90	25-40	5-20
	13-33	Silt loam, loam, clay loam	CL, CL-ML	A-7, A-4, A-6	0	0	95-100	75-100	65-100	40-90	25-45	5-25
	33-35	Unweathered bedrock			---	---	---	---	---	---	---	---
HkA:												
Haskins---------	0-11	Fine sandy loam	ML, SM, CL, CL-ML	A-2, A-4, A-6	0	0	95-100	85-100	55-85	25-50	20-30	3-15
	11-37	Clay loam, sandy clay loam, loam	CL, SC, CL-ML	A-2, A-4, A-6, A-7	0	0	85-100	70-100	55-85	30-65	25-45	5-25
	37-54	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	50-95	30-50	10-30
	54-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	50-95	30-50	10-30
HnA:												
Haskins---------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	85-100	70-100	50-70	20-30	5-15
	9-36	Clay loam, sandy clay loam, loam	CL, SC, CL-ML	A-2, A-4, A-6, A-7	0	0	85-100	70-100	55-85	30-65	25-45	5-25
	36-52	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	50-95	30-50	10-30
	52-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	50-95	30-50	10-30
HpA:												
Houcktown-------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	65-100	50-70	20-30	5-15
	8-35	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-4, A-6, A-7, A-2	0	0-1	95-100	60-100	50-85	25-75	25-45	5-25
	35-51	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-50	10-30
	51-80	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
HpB:												
Houcktown-------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	65-100	50-70	20-30	5-15
	10-30	Loam, sandy clay loam, clay loam	CL, SC, CL-ML	A-2, A-4, A-6, A-7	0	0-1	95-100	60-100	50-85	25-75	25-45	5-25
	30-50	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-50	10-30
	50-80	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25
HrB:												
Houcktown-------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	65-100	50-70	20-30	5-15
	9-21	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-2, A-4, A-6, A-7	0	0-1	95-100	60-100	50-85	25-75	25-45	5-25
	21-45	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-50	10-30
	45-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25
Glynwood--------	0-7	Clay loam	CL	A-7, A-6	0	0-2	95-100	90-100	80-100	65-85	35-50	15-30
	7-36	Silty clay loam, silty clay, clay	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	65-95	35-55	15-35
	36-47	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	47-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
Jenera----------	0-8	Fine sandy loam	SC, SC-SM	A-4, A-6	0	0	100	95-100	65-95	30-45	20-30	5-15
	8-47	Sandy clay loam, clay loam, loam	CL, SC, CL-ML	A-6, A-7, A-4	0	0	100	95-100	75-100	40-80	25-45	5-25
	47-58	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	70-95	20-45	5-25
	58-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HsA:												
Hoytville-------	0-9	Silty clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-50	15-25
	9-41	Clay, silty clay	CH, CL	A-6, A-7	0	0-5	95-100	85-100	80-100	75-95	35-60	15-35
	41-60	Clay, silty clay loam, clay loam	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	60-95	35-60	15-35
	60-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	50-95	30-50	10-30
HtA:												
Hoytville-------	0-8	Silty clay	CH, CL	A-7, A-6	0	0-5	95-100	90-100	85-100	80-95	35-60	15-30
	8-41	Clay, silty clay	CH, CL	A-6, A-7	0	0-5	95-100	85-100	80-100	75-95	35-60	15-35
	41-64	Clay, silty clay loam, clay loam	CL, CH	A-6, A-7	0	0-5	95-100	85-100	80-100	60-95	35-60	15-35
	64-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	80-100	50-95	30-50	10-30
JeA:												
Jenera----------	0-10	Fine sandy loam	SC, SC-SM	A-4, A-6	0	0	100	95-100	65-95	30-45	20-30	5-15
	10-37	Sandy clay loam, clay loam, loam	CL, SC, CL-ML	A-6, A-7, A-4	0	0	100	95-100	75-100	40-80	25-45	5-25
	37-50	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	70-95	20-45	5-25
	50-80	Clay loam, silty clay loam, loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25
JeB:												
Jenera----------	0-8	Fine sandy loam	SC-SM, SC	A-4, A-6	0	0	100	95-100	65-95	30-45	20-30	5-15
	8-47	Sandy clay loam, clay loam, loam	CL, SC, CL-ML	A-6, A-7, A-4	0	0	100	95-100	75-100	40-80	25-45	5-25
	47-58	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	70-95	20-45	5-25
	58-80	Clay loam, silty clay loam, loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	50-90	30-45	10-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
JfB:												
Jenera----------	0-9	Fine sandy loam	SC, SC-SM	A-4, A-6	0	0	100	95-100	65-95	30-45	20-30	5-15
	9-21	Sandy clay loam, clay loam, loam	CL, SC, CL-ML	A-6, A-7, A-4	0	0	100	95-100	75-100	40-80	25-45	5-25
	21-59	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	70-95	20-45	5-25
	59-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	90-100	65-95	50-90	30-50	10-30
Shinrock--------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	85-100	70-90	25-40	5-20
	8-24	Silty clay loam, silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-95	40-55	20-30
	24-40	Silty clay loam, silt loam, silt	CL, ML, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	75-100	15-50	2-30
	40-67	Stratified very fine sand to silty clay loam	CL, ML, SC, SM, CL-ML	A-4, A-6, A-7	0	0	100	100	75-100	40-95	15-50	2-30
	67-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	90-100	65-95	45-90	30-50	10-30
JoA:												
Joliet----------	0-9	Loam	CL	A-6	0-1	0-5	90-100	75-100	65-100	40-75	30-40	10-20
	9-18	Fine sandy loam, clay loam, silty clay loam	CL, CL-ML	A-6, A-4, A-7	0-1	0-10	90-100	75-100	65-100	30-85	20-45	5-20
	18-20	Unweathered bedrock			---	---	---	---	---	---	---	---
KnA:												
Knoxdale--------	0-11	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	95-100	85-100	70-90	20-40	3-20
	11-47	Silt loam, loam	CL, CL-ML, ML	A-4, A-6, A-7	0	0	100	95-100	85-100	55-90	20-45	3-25
	47-80	Stratified sandy loam to silt loam	CL, CL-ML, ML, SM	A-4, A-6	0	0	100	75-100	60-90	35-80	20-45	3-20

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
LbA:												
Lamberjack------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-95	70-90	40-70	20-40	5-20
	11-39	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-6, A-7	0	0	85-100	75-95	55-85	35-70	25-45	5-25
	39-44	Gravelly loam, gravelly clay loam, gravelly sandy loam	CL, SC, CL-ML	A-1-b, A-2, A-4, A-6	0	0	80-100	50-75	30-70	15-60	20-45	5-25
	44-62	Gravelly loamy coarse sand, very gravelly loamy coarse sand, gravelly coarse sandy loam	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	0-1	80-100	25-75	20-60	5-30	0-25	NP-10
	62-80	Silt loam, silty clay loam, loam	CL	A-6, A-7	0-1	0-5	90-100	90-100	80-100	50-90	30-45	10-25
LcA:												
Lamberjack------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-95	70-90	40-70	20-40	5-20
	11-36	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-6, A-7	0	0	85-100	75-95	55-85	35-70	25-45	5-25
	36-45	Gravelly loam, gravelly clay loam, gravelly sandy loam	CL, SC, CL-ML	A-1-b, A-2, A-4, A-6	0	0	80-100	50-75	30-70	15-60	20-45	5-25
	45-60	Very gravelly loamy coarse sand, gravelly coarse sandy loam, gravelly loamy coarse sand	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	0-1	80-100	25-75	20-60	5-30	0-25	NP-10
	60-80	Silt loam, silty clay loam, loam	CL	A-6, A-7	0-1	0-5	90-100	90-100	80-100	50-90	30-45	10-25
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LuB2:												
Lucas-----------	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-50	10-30
	7-23	Silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-100	40-70	19-40
	23-42	Silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-100	37-70	17-40
	42-80	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	95-100	80-100	37-70	17-40
LyE:												
Lybrand---------	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0-5	95-100	85-100	75-100	70-90	25-40	5-20
	8-29	Silty clay loam, silty clay, clay loam	CH, CL	A-7, A-6	0-1	0-5	95-100	85-100	85-95	65-95	35-55	15-35
	29-47	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
	47-80	Silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
MbA:												
Medway----------	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	75-100	70-100	70-90	25-40	3-20
	12-50	Loam, silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	95-100	75-100	75-95	45-90	25-45	3-25
	50-66	Stratified gravelly sandy loam to loam	CL, ML, SC, SM	A-2, A-4, A-6	0	0	90-100	60-100	45-95	25-75	15-40	NP-20
	66-80	Stratified loam to loamy coarse sand to gravelly sandy loam	CL, ML, SC, SM	A-1-b, A-2, A-4, A-6	0	0-5	65-100	50-100	30-95	10-75	15-40	NP-20

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
McA:												
Medway----------	0-10	Silt loam	CL, CL-ML, ML	A-4, A-6	0	0	100	75-100	70-100	70-90	25-40	3-20
	10-55	Loam, silt loam, clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	95-100	75-100	75-95	45-90	25-45	3-25
	55-72	Stratified very cobbly sandy loam to loam	CL, CL-ML, SC, SC-SM	A-2, A-4, A-6, A-1-b	0	0-50	75-100	35-100	30-90	10-75	15-40	NP-20
	72-74	Unweathered bedrock			---	---	---	---	---	---	---	---
MeA:												
Mermill---------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	85-100	75-100	50-70	20-40	5-20
	9-28	Clay loam, sandy clay loam, loam	CL, SC, CL-ML	A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	28-57	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	50-95	30-50	10-30
	57-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	50-95	30-50	10-30
MfA:												
Mermill---------	0-8	Clay loam	CL	A-6, A-7	0	0	95-100	85-100	80-100	50-80	35-45	15-25
	8-30	Clay loam, sandy clay loam, loam	CL, SC, CL-ML	A-4, A-6, A-7	0	0	90-100	85-100	70-85	40-75	25-45	5-25
	30-47	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	50-95	30-50	10-30
	47-80	Clay, silty clay, clay loam	CL	A-6, A-7	0	0-2	95-100	85-100	75-100	50-95	30-50	10-30
MgA:												
Millsdale-------	0-13	Silty clay loam	CL	A-6	0	0	90-100	75-100	65-100	60-95	35-45	15-25
	13-35	Silty clay, silty clay loam, clay loam	CL, CH	A-7, A-6	0	0-5	85-100	75-100	65-100	55-95	40-55	20-35
	35-37	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MnA:												
Milton----------	0-10	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-95	20-40	5-20
	10-21	Silty clay loam, clay loam, clay	CL, CH	A-6, A-7	0	0	95-100	80-100	75-100	60-95	40-60	20-35
	21-29	Clay, silty clay	CH, CL	A-7, A-6	0	0-3	95-100	80-100	75-100	70-95	40-70	20-40
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---
MpD3:												
Morley----------	0-6	Clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-100	60-85	35-50	15-35
	6-14	Silty clay, clay loam, clay	CH, CL	A-7, A-6	0-1	0-5	95-100	75-100	70-95	65-90	35-55	15-35
	14-39	Silty clay loam, clay loam, clay	CL	A-7, A-6	0-1	0-5	95-100	75-100	70-95	65-90	30-50	10-30
	39-80	Clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-100	70-95	45-90	30-50	10-30
MrA:												
Morley----------	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	85-100	75-100	50-70	25-40	5-20
	8-24	Clay loam, clay, silty clay loam	CL	A-7, A-6	0	0	95-100	75-100	65-95	60-85	35-55	15-30
	24-45	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	75-100	65-95	45-90	35-50	15-30
	45-66	Loam, clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-100	65-95	45-90	30-45	10-25
	66-68	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
MsB:												
Morley----------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	85-100	75-100	50-70	25-40	5-20
	9-34	Clay loam, clay, silty clay loam	CL	A-7, A-6	0	0	95-100	75-100	65-95	60-85	35-55	15-30
	34-42	Clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	75-100	65-95	45-90	35-50	15-30
	42-61	Loam, clay loam, silty clay loam	CL	A-6, A-7	0-1	0-5	95-100	75-100	65-95	45-90	30-45	10-25
	61-63	Unweathered bedrock			---	---	---	---	---	---	---	---
Milton----------	0-8	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	85-100	70-95	20-40	5-20
	8-27	Silty clay loam, clay loam, clay	CH, CL	A-6, A-7	0	0	95-100	80-100	75-100	60-95	40-60	20-35
	27-29	Clay, silty clay	CH, CL	A-7, A-6	0	0-3	95-100	80-100	75-100	70-95	40-70	20-40
	29-31	Unweathered bedrock			---	---	---	---	---	---	---	---
MvB:												
Mortimer--------	0-8	Silt loam	CL	A-6	0	0	95-100	90-100	85-100	70-90	30-40	10-20
	8-39	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-70	20-40
	39-49	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-70	20-40
	49-80	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-70	20-40
MwB2:												
Mortimer--------	0-7	Silty clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-50	15-30
	7-39	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-70	20-40
	39-52	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-70	20-40
	52-80	Silty clay, clay	CH, CL	A-7	0	0-5	95-100	90-100	85-100	80-95	45-70	20-40

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
NnA:												
Nappanee--------	0-8	Loam	CL	A-6, A-4	0	0-5	95-100	90-100	85-100	55-70	30-40	5-20
	8-34	Silty clay, clay	CH, CL	A-7, A-6	0	0-5	95-100	90-100	85-100	80-95	40-70	20-40
	34-56	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	70-95	30-50	10-30
	56-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	85-100	80-100	50-95	30-50	10-30
NnB:												
Nappanee--------	0-8	Loam	CL	A-6, A-4	0	0-5	95-100	90-100	85-100	55-70	30-40	5-20
	8-31	Silty clay, clay	CH, CL	A-7, A-6	0	0-5	95-100	90-100	85-100	80-95	40-70	20-40
	31-46	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	70-95	30-50	10-30
	46-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	85-100	80-100	50-95	30-50	10-30
NpA:												
Nappanee--------	0-8	Silty clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	30-50	15-30
	8-40	Silty clay, clay	CH, CL	A-7, A-6	0	0-5	95-100	90-100	85-100	80-95	40-70	20-40
	40-56	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	70-95	30-50	10-30
	56-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	85-100	80-100	50-95	30-50	10-30
NpB2:												
Nappanee--------	0-7	Silty clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	30-50	15-30
	7-32	Silty clay, clay	CH, CL	A-7, A-6	0	0-5	95-100	90-100	85-100	80-95	40-70	20-40
	32-40	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	70-95	30-50	10-30
	40-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	85-100	80-100	50-95	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
NrA:												
Nappanee--------	0-8	Loam	CL	A-6, A-4	0	0-5	95-100	90-100	85-100	55-70	30-40	5-20
	8-34	Silty clay, clay	CH, CL	A-7, A-6	0	0-5	95-100	90-100	85-100	80-95	40-70	20-40
	34-49	Silty clay, clay, clay loam	CL	A-7, A-6	0	0-5	95-100	90-100	85-100	70-95	30-50	10-30
	49-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0-1	0-5	95-100	85-100	80-100	50-95	30-50	10-30
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
OrA:												
Oshtemo---------	0-9	Fine sandy loam	SM	A-2, A-4	0	0	95-100	75-95	60-70	25-40	0-25	NP-5
	9-29	Fine sandy loam, sandy clay loam, gravelly coarse sandy loam	CL-ML, SC, CL	A-2, A-4	0	0	95-100	55-95	35-85	15-50	20-30	5-15
	29-52	Loamy sand, sandy loam, gravelly sandy loam	SM, SP-SM	A-2, A-1-b	0	0	85-95	55-95	30-70	10-30	0-25	NP-10
	52-80	Stratified coarse sand to gravelly loamy coarse sand	SP, SP-SM	A-1, A-2, A-3	0	0-5	65-95	55-90	20-60	0-15	0-25	NP-5
OrB:												
Oshtemo---------	0-10	Fine sandy loam	SM	A-2, A-4	0	0	95-100	75-95	60-70	25-40	0-25	NP-5
	10-27	Fine sandy loam, sandy clay loam, gravelly coarse sandy loam	CL, CL-ML, SC	A-4, A-2	0	0	95-100	55-95	35-85	15-50	20-30	5-15
	27-43	Loamy sand, sandy loam, gravelly sandy loam	SM, SP-SM	A-2, A-1-b	0	0	85-95	55-95	30-70	10-30	0-25	NP-10
	43-80	Stratified coarse sand to gravelly loamy coarse sand	SP, SP-SM	A-1, A-2, A-3	0	0-5	65-95	55-90	20-60	0-15	0-25	NP-5

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
OrC:												
Oshtemo---------	0-8	Fine sandy loam	SM	A-2, A-4	0	0	95-100	75-95	60-70	25-40	0-25	NP-5
	8-25	Fine sandy loam, sandy clay loam, gravelly coarse sandy loam	CL, CL-ML, SC	A-2, A-4	0	0	95-100	55-95	35-85	15-50	20-30	5-15
	25-52	Loamy sand, sandy loam, gravelly sandy loam	SM, SP-SM	A-2, A-1-b	0	0	85-95	55-95	30-70	10-30	0-25	NP-10
	52-80	Stratified coarse sand to gravelly loamy coarse sand	SP, SP-SM	A-1, A-2, A-3	0	0-5	65-95	55-90	20-60	0-15	0-25	NP-5
OsB:												
Oshtemo---------	0-11	Sandy loam	SM	A-2, A-4	0	0	95-100	75-95	55-70	25-40	0-25	NP-10
	11-34	Sandy loam, sandy clay loam, gravelly sandy loam	CL, CL-ML, SC	A-2, A-4	0	0	95-100	55-95	35-85	15-50	20-30	5-15
	34-44	Loamy sand, sandy loam, gravelly sandy loam	SM, SP-SM	A-2, A-1-b	0	0	85-95	55-95	30-70	10-30	0-25	NP-10
	44-75	Loamy sand, loamy coarse sand, gravelly loamy coarse sand	SP, SP-SM	A-1, A-2, A-3	0	0-5	65-95	55-90	20-60	0-15	0-25	NP-5
	75-80	Clay, silty clay loam, clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	45-95	30-50	10-30
OwB:												
Ottokee---------	0-11	Loamy fine sand	SM	A-2, A-4	0	0	100	90-100	65-80	15-45	0-20	NP-5
	11-65	Loamy fine sand, sand, loamy sand	SM	A-2	0	0	100	90-100	65-80	20-35	0-20	NP-5
	65-80	Loamy fine sand, sand, loamy sand	SM, SW-SM	A-2, A-3	0	0	100	90-100	70-80	5-25	0-15	NP-5

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
PbA:												
Patton----------	0-12	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	85-100	80-95	30-45	10-25
	12-48	Silty clay loam	CL	A-7, A-6	0	0	100	90-100	85-100	80-100	30-45	10-25
	48-80	Stratified silt loam to silty clay loam	CL	A-6, A-7	0	0	100	90-100	85-100	75-95	30-45	10-25
PmA:												
Pewamo----------	0-11	Silty clay loam	CL	A-6, A-7	0	0-5	90-100	85-100	75-100	70-95	35-50	15-30
	11-53	Clay loam, clay, silty clay	CH, CL	A-7, A-6	0	0-5	95-100	85-100	75-100	60-95	35-60	15-35
	53-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-5	95-100	75-100	75-100	45-90	30-50	10-30
PnA:												
Pewamo----------	0-10	Silty clay loam	CL	A-6, A-7	0	0-5	90-100	85-100	75-100	70-95	35-50	15-30
	10-52	Clay loam, clay, silty clay	CH, CL	A-7, A-6	0	0-5	95-100	85-100	75-100	60-95	35-60	15-35
	52-80	Clay loam, silty clay loam	CL	A-7, A-6	0	0-5	95-100	75-100	75-100	45-90	30-50	10-30
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
Pt:												
Pits------------	---	---	---	---	---	---	---	---	---	---	---	---
RcA:												
Randolph--------	0-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	90-100	75-85	25-40	5-20
	11-25	Silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7	0-1	0-5	80-100	75-100	75-95	60-85	40-60	20-35
	25-27	Unweathered bedrock			---	---	---	---	---	---	---	---

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
RgB:												
Rawson----------	0-19	Sandy loam	ML, SM	A-2-4, A-4	0	0	90-100	75-100	50-85	25-50	0-30	NP-15
	19-32	Clay loam, sandy loam, gravelly sandy clay loam	CL, GC, SC	A-2-4, A-4, A-6, A-7	0	0	65-100	60-95	45-90	25-75	25-45	5-25
	32-36	Clay loam, clay, silty clay loam	CL, CH	A-6, A-7	0	0	90-100	85-100	80-100	45-95	30-60	10-35
	36-60	Clay loam, clay, silty clay loam	CL	A-6, A-7	0	0	90-100	85-100	80-100	45-95	30-50	10-30
RhA:												
Rensselaer------	0-12	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	50-70	20-40	5-20
	12-46	Loam, clay loam, silty clay loam	CL, CL-ML	A-6, A-7	0	0	95-100	90-100	80-100	50-90	25-45	5-25
	46-54	Fine sandy loam, loam, sandy loam	CL, SC	A-6, A-4	0	0	95-100	90-100	70-100	35-75	25-40	5-20
	54-63	Stratified loamy sand to silt loam	CL-ML, ML, SC, SM	A-2, A-4, A-6	0	0	95-100	85-100	70-85	10-80	0-30	NP-15
	63-80	Clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	80-100	50-95	30-50	10-30
RnA:												
Rimer-----------	0-10	Loamy sand	SM, SC	A-1, A-2, A-2-4	0	0	100	95-100	45-80	15-30	0-25	NP-10
	10-23	Loamy fine sand, loamy sand	SM, SC	A-2, A-2-4	0	0	100	95-100	75-90	20-30	0-25	NP-10
	23-28	Fine sandy loam, sandy loam	SC, SM	A-4	0	0	100	95-100	60-80	35-45	0-30	NP-15
	28-54	Clay, silty clay, silty clay loam	CL, CH	A-6, A-7	0	0-5	95-100	85-100	85-100	45-95	30-55	10-30
	54-80	Clay, silty clay, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	85-100	45-95	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
RoA:												
Rimer-----------	0-11	Loamy fine sand	SC, SM	A-1, A-2, A-2-4	0	0	100	95-100	45-80	15-30	0-25	NP-10
	11-24	Loamy fine sand, loamy sand	SC, SM	A-2, A-2-4	0	0	100	95-100	75-90	20-30	0-25	NP-10
	24-45	Fine sandy loam, sandy loam	SC, SM	A-4	0	0	100	95-100	60-80	35-45	0-30	NP-15
	45-52	Loamy sand	SC, SM	A-2, A-2-4, A-1	0	0	100	95-100	45-90	20-30	0-25	NP-10
	52-80	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	85-100	50-95	30-45	10-25
RtA:												
Rossburg--------	0-13	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	60-90	20-40	5-20
	13-56	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	70-95	50-80	25-40	5-20
	56-80	Stratified gravelly sandy loam to loam	CL, ML, SC, SM	A-2-4, A-4	0	0	80-100	50-100	45-90	25-65	0-25	NP-10
SeA:												
Shawtown--------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-90	40-75	20-40	5-20
	9-53	Loam, clay loam, gravelly loam	CL, SC, CL-ML	A-1-b, A-2, A-4, A-6, A-7	0	0-1	80-100	60-95	35-80	15-60	25-45	5-25
	53-66	Gravelly loamy coarse sand, loamy sand, very gravelly sandy loam	SC, SM, SP-SM	A-1-b, A-2	0	0-1	80-100	40-95	25-80	10-35	0-25	NP-10
	66-80	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SeB:												
Shawtown--------	0-9	Loam	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-90	40-75	20-40	5-20
	9-55	Loam, clay loam, gravelly loam	CL, SC, CL-ML	A-1-b, A-2, A-4, A-6, A-7	0	0-1	80-100	60-95	35-80	15-60	25-45	5-25
	55-63	Gravelly loamy coarse sand, loamy sand, very gravelly sandy loam	SC, SM, SP-SM	A-1-b, A-2	0	0-1	80-100	40-95	25-80	10-35	0-25	NP-10
	63-80	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0-5	95-100	90-100	75-95	45-95	30-50	10-30
SfB:												
Shinrock--------	0-8	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	85-100	70-90	25-40	5-20
	8-36	Silty clay loam, silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-95	40-55	20-30
	36-50	Silty clay loam, silt loam, silt	CL, ML, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	75-100	15-50	2-30
	50-80	Stratified very fine sand to silty clay loam	CL, ML, SC, SM, CL-ML	A-4, A-6, A-7	0	0	100	100	75-100	40-95	15-50	2-30
SgC2:												
Shinrock--------	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	75-95	35-50	15-30
	7-34	Silty clay loam, silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-95	40-55	20-30
	34-51	Silty clay loam, silt loam, silt	CL, ML, CL-ML	A-6, A-7, A-4	0	0	100	100	90-100	75-100	15-50	2-30
	51-80	Stratified very fine sand to silty clay loam	CL, ML, SC, SM, CL-ML	A-4, A-6, A-7	0	0	100	100	75-100	40-95	15-50	2-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
SkB:												
Shinrock--------	0-10	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	85-100	70-90	25-40	5-20
	10-26	Silty clay loam, silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-95	40-55	20-30
	26-43	Silty clay loam, silt loam, silt	CL, ML, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	75-100	15-50	2-30
	43-62	Stratified very fine sand to silty clay loam	CL, ML, SC, SM, CL-ML	A-4, A-6, A-7	0	0	100	100	75-100	40-95	15-50	2-30
	62-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	90-100	65-95	50-90	30-50	10-30
Glynwood--------	0-8	Silty clay loam	CL	A-6, A-7	0	0-2	95-100	90-100	80-100	70-95	35-50	15-30
	8-26	Clay, silty clay, silty clay loam	CH, CL	A-6, A-7	0-1	0-5	95-100	85-100	75-100	60-95	35-55	15-35
	26-39	Clay loam, silty clay loam, silty clay	CL	A-6, A-7	0-1	0-5	95-100	80-95	65-95	45-90	30-50	10-30
	39-80	Clay loam, silty clay loam	CL	A-7, A-6	0-1	0-5	95-100	75-95	65-95	45-90	30-50	10-30
SmA:												
Shoals----------	0-11	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	90-100	65-90	25-40	5-20
	11-59	Silt loam, loam, silty clay loam, clay loam	CL, CL-ML	A-6, A-4, A-7	0	0	100	90-100	90-100	75-85	25-45	5-25
	59-80	Stratified sandy loam to loam	CL-ML, ML, SM, CL	A-4	0	0-3	90-100	75-100	50-100	25-75	0-35	NP-15

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
SnA:												
Sloan-----------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	55-75	20-40	5-20
	11-46	Loam, clay loam, silt loam	CL	A-4, A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	5-25
	46-80	Stratified sandy loam to gravelly silty clay loam	CL, ML	A-4, A-6	0	0	85-100	70-100	45-95	30-90	23-35	3-15
SoA:												
Sloan-----------	0-11	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	11-58	Silty clay loam, clay loam, silt loam	CL	A-4, A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	5-25
	58-80	Stratified loam to silty clay loam	CL, ML	A-4, A-6	0	0	85-100	70-100	45-95	30-90	23-35	3-15
SpA:												
Sloan-----------	0-10	Silty clay loam	CL	A-6, A-7	0	0	100	90-100	90-100	80-95	35-45	15-25
	10-39	Silty clay loam, clay loam, silt loam	CL	A-4, A-6, A-7	0	0	100	90-100	85-100	50-95	30-45	5-25
	39-71	Stratified loam to silty clay loam	CL, ML	A-4, A-6	0	0	85-100	70-100	45-95	30-90	23-35	3-15
	71-73	Unweathered bedrock			---	---	---	---	---	---	---	---
StB2:												
St. Clair-------	0-4	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	75-95	35-50	15-30
	4-37	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	90-100	75-100	70-95	45-70	20-40
	37-48	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0-5	95-100	75-100	70-100	60-95	40-60	20-35
	48-80	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0-5	95-100	75-100	70-100	60-95	40-60	20-35

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
StC2:												
St. Clair-------	0-6	Silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	80-100	75-95	35-50	15-30
	6-35	Clay, silty clay	CH, CL	A-7	0	0-5	95-100	90-100	75-100	70-95	45-70	20-40
	35-42	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0-5	95-100	75-100	70-100	60-95	40-60	20-35
	42-80	Clay, silty clay, silty clay loam	CH, CL	A-7	0	0-5	95-100	75-100	70-100	60-95	40-60	20-35
ThA:												
Thackery--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	80-95	55-75	25-40	5-20
	10-25	Loam, clay loam	CL	A-7, A-6	0	0	100	80-100	80-95	55-75	30-45	10-25
	25-56	Loam, sandy clay loam, gravelly clay loam	CL, SC	A-7, A-6, A-2	0	0-1	80-100	60-95	60-85	30-75	30-45	10-25
	56-69	Loamy sand, very gravelly sand, gravelly loamy coarse sand	SM	A-1, A-2-4	0	0-1	80-100	55-75	25-65	5-15	0-25	NP-5
	69-80	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	80-100	50-90	30-45	10-25
TkA:												
Tiderishi-------	0-11	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	75-95	55-75	20-35	5-15
	11-42	Loam, clay loam, sandy clay loam	CL, SC, CL-ML	A-6, A-7, A-4	0	0	90-100	85-100	70-85	35-75	25-45	5-25
	42-57	Silt loam, fine sandy loam, silty clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	60-90	35-85	20-45	5-25
	57-80	Clay loam, loam, silty clay loam	CL	A-6, A-7	0	0-5	95-100	90-100	85-100	50-90	30-45	10-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
TnA:												
Toledo----------	0-9	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	80-95	35-50	15-30
	9-50	Silty clay, clay	CH, CL	A-7, A-6	0	0	100	100	95-100	80-100	40-70	19-40
	50-80	Silty clay, clay, silty clay loam	CH, CL	A-7, A-6	0	0	100	100	95-100	80-100	37-70	17-40
ToB:												
Tuscola---------	0-10	Loamy fine sand	SC, SM	A-1, A-2-4	0	0	100	100	45-90	15-30	0-25	NP-10
	10-55	Fine sandy loam, loam, sandy clay loam	CL, CL-ML, SC	A-4, A-6	0	0	100	100	80-95	40-90	25-45	5-25
	55-80	Stratified loamy coarse sand to silt loam	ML, SM, SC	A-6, A-4, A-2	0	0	85-100	80-100	70-90	10-75	0-45	NP-25
TpA:												
Tuscola---------	0-8	Fine sandy loam	ML, SC, SM	A-2, A-4	0	0	100	100	60-95	30-50	15-25	3-10
	8-40	Clay loam, loam, fine sandy loam	CL, CL-ML, SC	A-4, A-6	0	0	100	100	80-95	40-90	20-45	5-25
	40-80	Stratified fine sand to silt loam	ML, SM	A-6, A-4, A-2	0	0	100	100	75-90	10-90	0-45	NP-25
TpB:												
Tuscola---------	0-11	Fine sandy loam	ML, SC, SM	A-2, A-4	0	0	100	100	60-95	30-50	15-25	3-10
	11-44	Clay loam, loam, fine sandy loam	CL, CL-ML, SC	A-4, A-6	0	0	100	100	80-95	40-90	20-45	5-25
	44-80	Stratified fine sand to silt loam	ML, SM	A-6, A-4, A-2	0	0	100	100	75-90	10-90	0-45	NP-25
TuB:												
Tuscola---------	0-9	Silt loam	CL, CL-ML, ML	A-4	0	0	100	100	85-100	60-90	15-25	3-10
	9-43	Silty clay loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	80-95	50-90	20-45	5-25
	43-80	Stratified fine sand to silt loam	ML, SM	A-6, A-4, A-2	0	0	100	100	75-90	10-90	0-45	NP-25

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
UcA:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
UcD:												
Udorthents------	---	---	---	---	---	---	---	---	---	---	---	---
Ur:												
Urban land------	---	---	---	---	---	---	---	---	---	---	---	---
VaA:												
Vanlue----------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-95	55-70	20-35	5-15
	10-35	Clay loam, loam, sandy clay loam	CL, SC, CL-ML	A-6, A-7, A-4	0	0	100	90-100	85-100	45-80	25-45	5-25
	35-59	Silt loam, silty clay loam	CL, CL-ML	A-4, A-6, A-7	0	0	100	100	90-100	70-95	20-45	5-25
	59-80	Clay loam, silty clay loam, loam	CL	A-6, A-7	0	0-3	95-100	90-100	75-95	50-95	30-45	10-25
VeA:												
Vaughnsville----	0-8	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	75-100	65-95	50-75	25-40	5-20
	8-20	Clay loam, sandy clay loam, loam	CL, SC, CL-ML	A-4, A-6, A-7	0	0	90-100	80-100	65-90	35-70	25-45	5-25
	20-36	Sandy loam, loam, gravelly sandy clay loam	CL, CL-ML, ML, SM	A-2, A-4, A-6	0	0	80-100	65-100	60-80	30-65	0-40	NP-20
	36-45	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	75-100	45-95	30-50	10-30
	45-80	Clay, clay loam, silty clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	75-100	45-95	30-50	10-30

Table 28.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
WeA:												
Westland--------	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	90-100	75-100	55-75	20-40	5-20
	10-52	Clay loam, loam, sandy clay loam	CL, SC	A-6, A-7	0	0-5	80-100	75-95	65-90	45-70	30-45	10-25
	52-59	Clay loam, loam, gravelly sandy loam	CL, ML, SC, SM	A-2-4, A-4, A-6	0	0-5	55-100	50-95	25-85	15-70	10-40	NP-20
	59-80	Loamy coarse sand, very gravelly coarse sand, gravelly loamy coarse sand	GP, GP-GM, SP, SP-SM	A-1, A-1-b	0	0-12	40-75	35-75	10-45	0-10	0-25	NP-5
Rensselaer------	0-19	Loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	50-70	25-40	5-20
	19-38	Loam, clay loam, silty clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-100	50-90	30-45	10-25
	38-58	Fine sandy loam, loam, sandy clay loam	CL, SC	A-6, A-4	0	0	95-100	85-100	70-100	35-75	25-45	5-25
	58-80	Stratified sand to silt loam	CL-ML, ML, SC, SM	A-2, A-4, A-6	0	0	95-100	85-100	70-85	10-80	0-30	NP-15

Table 29.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Shrink-swell potential	Erosion factors Kw	Erosion factors Kf	Erosion factors T	Wind erodibility group
	In	Pct	g/cc	In/hr	In/in	Pct				
AdA:										
Adrian----------	0-26	0-0	0.30-0.55	0.20-6.00	0.35-0.45	---	---	---	2	2
	26-80	2-10	1.40-1.75	6.00-20.00	0.03-0.08	Low	.15	.15		
AkA:										
Alvada----------	0-10	18-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.24	.28	5	6
	10-39	18-35	1.35-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	39-46	18-32	1.40-1.60	0.60-2.00	0.08-0.15	Low	.24	.28		
	46-50	5-18	1.50-1.70	2.00-6.00	0.08-0.12	Low	.24	.28		
	50-80	22-35	1.60-1.80	0.06-0.60	0.05-0.10	Moderate	.32	.32		
AmA:										
Alvada----------	0-11	18-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.24	.28	5	6
	11-42	18-35	1.35-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	42-46	18-32	1.40-1.60	0.60-2.00	0.08-0.15	Low	.24	.28		
	46-53	5-18	1.50-1.70	2.00-6.00	0.08-0.12	Low	.24	.28		
	53-80	22-35	1.60-1.80	0.06-0.60	0.05-0.10	Moderate	.32	.32		
Urban land------	---	---	---	---	---	---	---	---	-	---
AnA:										
Aquents---------	0-6	27-40	1.35-1.55	0.60-2.00	0.10-0.20	Moderate	.28	.28	-	7
	6-30	35-45	1.40-1.70	0.20-0.60	0.08-0.13	Moderate	.32	.32		
	30-80	27-40	1.50-1.70	0.20-0.60	0.05-0.10	Moderate	.37	.37		
ApB:										
Arkport---------	0-10	5-15	1.10-1.40	2.00-6.00	0.09-0.12	Low	.17	.17	5	2
	10-15	3-15	1.25-1.55	2.00-6.00	0.06-0.16	Low	.28	.28		
	15-69	1-15	1.25-1.55	2.00-6.00	0.06-0.12	Low	.28	.28		
	69-80	1-5	1.25-1.55	2.00-6.00	0.02-0.06	Low	.28	.28		
ArA:										
Aurand----------	0-11	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	11-29	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	29-33	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	33-48	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	48-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
AsA:										
Aurand----------	0-10	12-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.28	4	5
	10-26	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.24	.28		
	26-35	15-35	1.30-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	35-50	27-42	1.40-1.80	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	50-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
BgA:										
Biglick---------	0-10	20-27	1.30-1.55	0.60-2.00	0.15-0.23	Low	.32	.32	1	6
	10-14	35-60	1.45-1.65	0.06-0.60	0.12-0.18	Moderate	.24	.32		
	14-16	---	---	0.00-0.60	---	---	---	---		
Milton----------	0-10	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	10-14	35-50	1.45-1.65	0.20-0.60	0.12-0.18	Moderate	.32	.37		
	14-24	40-60	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	24-26	---	---	0.00-0.60	---	---	---	---		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Shrink- swell potential	Erosion factors			Wind erodi- bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in	Pct				
BgB:										
Biglick---------	0-9	20-27	1.30-1.55	0.60-2.00	0.15-0.23	Low	.32	.32	1	6
	9-13	35-60	1.45-1.65	0.06-0.60	0.12-0.18	Moderate	.24	.32		
	13-15	---	---	0.00-0.60	---	---	---	---		
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	8-20	35-50	1.45-1.65	0.20-0.60	0.12-0.18	Moderate	.32	.37		
	20-26	40-60	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	26-28	---	---	0.00-0.60	---	---	---	---		
BnA:										
Blount----------	0-10	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	10-37	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	37-56	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	56-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
BoA:										
Blount----------	0-9	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	9-21	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	21-55	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	55-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
BoB:										
Blount----------	0-8	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	8-30	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	30-45	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	45-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
BpA:										
Blount----------	0-9	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	9-31	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	31-43	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	43-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Houcktown-------	0-9	12-20	1.35-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	9-28	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.32	.37		
	28-52	27-37	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	52-80	23-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
BrA:										
Blount----------	0-9	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	9-26	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	26-52	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	52-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Jenera----------	0-9	10-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.20	.20	5	3
	9-31	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Low	.32	.32		
	31-44	15-35	1.50-1.70	0.20-0.60	0.09-0.12	Low	.37	.37		
	44-80	27-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
BuA:										
Blount----------	0-10	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	10-28	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	28-42	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	42-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
ChC:										
Channahon-------	0-7	20-27	1.30-1.55	0.60-2.00	0.15-0.23	Low	.32	.32	1	6
	7-13	20-35	1.15-1.35	0.60-2.00	0.15-0.22	Moderate	.32	.32		
	13-15	---	---	0.00-0.60	---	---	---	---		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Shrink-swell potential	Erosion factors			Wind erodibility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in	Pct				
ChC:										
Biglick---------	0-7	20-27	1.30-1.55	0.60-2.00	0.15-0.23	Low	.32	.32	1	6
	7-12	35-60	1.45-1.65	0.06-0.60	0.12-0.18	Moderate	.24	.32		
	12-14	---	---	0.00-0.60	---	---	---	---		
CoA:										
Colwood---------	0-11	7-26	1.30-1.60	0.60-2.00	0.20-0.24	Low	.28	.28	5	5
	11-56	18-35	1.30-1.60	0.20-2.00	0.17-0.22	Low	.43	.43		
	56-80	5-12	1.45-1.65	0.60-2.00	0.08-0.22	Low	.43	.43		
CtA:										
Cygnet----------	0-11	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.24	.28	4	5
	11-30	18-35	1.25-1.60	0.60-2.00	0.14-0.18	Low	.28	.32		
	30-53	5-25	1.40-1.60	2.00-6.00	0.12-0.16	Low	.24	.28		
	53-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
CuA:										
Cygnet----------	0-10	12-20	1.30-1.50	0.60-2.00	0.16-0.22	Low	.24	.28	4	5
	10-42	18-35	1.25-1.60	0.60-2.00	0.14-0.18	Low	.28	.32		
	42-57	5-25	1.40-1.60	2.00-6.00	0.12-0.16	Low	.24	.28		
	57-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
DbA:										
Darroch---------	0-11	12-26	1.30-1.60	0.60-2.00	0.18-0.24	Low	.32	.37	5	5
	11-44	18-35	1.50-1.70	0.60-2.00	0.09-0.20	Low	.37	.37		
	44-80	5-20	1.50-1.70	0.60-2.00	0.19-0.21	Low	.49	.55		
DeA:										
Del Rey---------	0-10	15-27	1.30-1.50	0.60-2.00	0.22-0.24	Low	.43	.43	5	6
	10-37	35-45	1.40-1.65	0.06-0.20	0.12-0.20	Moderate	.37	.37		
	37-80	22-33	1.50-1.70	0.06-0.20	0.09-0.11	Moderate	.43	.43		
DfA:										
Del Rey---------	0-9	15-27	1.30-1.50	0.60-2.00	0.22-0.24	Low	.43	.43	5	6
	9-41	35-45	1.40-1.65	0.06-0.20	0.12-0.20	Moderate	.37	.37		
	41-80	22-33	1.50-1.70	0.06-0.20	0.09-0.11	Moderate	.43	.43		
Blount----------	0-8	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	8-27	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	27-44	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	44-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
DuB:										
Dunbridge-------	0-8	4-8	1.40-1.60	6.00-20.00	0.10-0.13	Low	.17	.20	2	2
	8-25	18-30	1.45-1.70	2.00-6.00	0.10-0.18	Low	.20	.43		
	25-27	---	---	0.00-0.60	---	---	---	---		
EmA:										
Elliott---------	0-12	24-27	1.10-1.30	0.60-2.00	0.22-0.24	Low	.28	.28	4	6
	12-36	35-50	1.30-1.60	0.20-0.60	0.11-0.20	Moderate	.28	.28		
	36-80	27-40	1.70-1.90	0.06-0.60	0.07-0.10	Moderate	.32	.37		
FbA:										
Flatrock--------	0-9	18-27	1.20-1.50	0.60-2.00	0.20-0.24	Low	.32	.32	5	6
	9-44	18-35	1.25-1.60	0.60-2.00	0.17-0.22	Low	.32	.32		
	44-80	15-35	1.20-1.60	0.60-6.00	0.12-0.18	Low	.28	.32		
FcA:										
Flatrock--------	0-11	18-27	1.20-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	11-52	18-35	1.25-1.60	0.60-2.00	0.17-0.22	Low	.32	.32		
	52-80	15-35	1.20-1.60	0.60-6.00	0.12-0.18	Low	.28	.32		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (K_{sat})	Available water capacity	Shrink-swell potential	Erosion factors			Wind erodi-bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in	Pct				
FdA:										
Flatrock--------	0-11	18-27	1.20-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	11-52	18-35	1.25-1.60	0.60-2.00	0.17-0.22	Low	.32	.32		
	52-64	15-35	1.20-1.60	0.60-6.00	0.12-0.18	Low	.28	.32		
	64-66	---	---	0.00-0.60	---	---	---	---		
FoA:										
Fox------------	0-9	10-17	1.35-1.55	0.60-2.00	0.17-0.24	Low	.37	.37	4	5
	9-30	18-35	1.55-1.65	0.60-2.00	0.10-0.19	Low	.32	.32		
	30-80	0-5	1.30-1.70	6.00-99.90	0.02-0.04	Low	.10	.24		
FoB:										
Fox------------	0-9	10-17	1.35-1.55	0.60-2.00	0.17-0.24	Low	.37	.37	4	5
	9-37	18-35	1.55-1.65	0.60-2.00	0.10-0.19	Low	.32	.32		
	37-80	0-5	1.30-1.70	6.00-99.90	0.02-0.04	Low	.10	.24		
FoC2:										
Fox------------	0-6	10-17	1.35-1.55	0.60-2.00	0.17-0.24	Low	.37	.37	4	5
	6-32	18-35	1.55-1.65	0.60-2.00	0.10-0.19	Low	.32	.32		
	32-80	0-5	1.30-1.70	6.00-99.90	0.02-0.04	Low	.10	.24		
FsA:										
Fulton----------	0-8	16-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	8-42	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	42-60	35-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.32	.32		
	60-80	35-60	1.45-1.65	0.01-0.20	0.08-0.12	Moderate	.32	.32		
FtA:										
Fulton----------	0-10	16-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	10-25	45-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	25-45	35-60	1.40-1.65	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	45-68	35-60	1.45-1.65	0.01-0.20	0.08-0.12	Moderate	.32	.32		
	68-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
GaB:										
Gallman---------	0-10	10-25	1.30-1.45	0.60-2.00	0.14-0.20	Low	.32	.37	5	5
	10-61	18-30	1.45-1.65	2.00-6.00	0.10-0.16	Low	.24	.32		
	61-80	3-15	1.25-1.55	2.00-20.00	0.06-0.10	Low	.17	.24		
GfA:										
Gilford---------	0-12	10-20	1.50-1.70	2.00-6.00	0.17-0.24	Low	.10	.10	5	3
	12-27	8-17	1.60-1.70	2.00-6.00	0.10-0.14	Low	.20	.20		
	27-36	3-12	1.60-1.80	6.00-20.00	0.04-0.11	Low	.15	.15		
	36-80	2-10	1.65-1.80	6.00-20.00	0.03-0.11	Low	.15	.15		
GmA:										
Glynwood--------	0-10	16-27	1.25-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	10-31	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	31-40	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	40-61	22-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
	61-63	---	---	0.00-0.60	---	---	---	---		
GnB:										
Glynwood--------	0-9	16-27	1.25-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	9-37	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	37-47	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	47-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
GpB2:										
Glynwood--------	0-7	27-38	1.35-1.55	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	7
	7-31	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	31-40	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	40-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in	Pct				
GpC2:										
Glynwood--------	0-6	27-38	1.35-1.55	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	7
	6-32	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	32-41	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	41-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
GsB:										
Glynwood--------	0-7	27-38	1.35-1.55	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	7-36	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	36-47	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	47-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Blount----------	0-8	22-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	8-32	35-48	1.40-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	32-44	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	44-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Houcktown-------	0-9	12-20	1.35-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	9-37	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.32	.37		
	37-45	27-37	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	45-80	23-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
GuB:										
Glynwood--------	0-10	16-27	1.25-1.50	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	10-36	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	36-49	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	49-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
HaA:										
Harrod----------	0-13	18-27	1.20-1.45	0.60-2.00	0.20-0.24	Low	.28	.28	2	6
	13-33	18-32	1.20-1.50	0.60-2.00	0.14-0.18	Low	.24	.28		
	33-35	---	---	0.00-0.60	---	---	---	---		
HkA:										
Haskins---------	0-11	10-18	1.30-1.45	2.00-6.00	0.12-0.18	Low	.24	.28	4	3
	11-37	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	37-54	27-42	1.70-1.90	0.01-0.20	0.05-0.10	Moderate	.28	.32		
	54-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HnA:										
Haskins---------	0-9	12-20	1.30-1.45	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	9-36	18-35	1.45-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	36-52	27-42	1.70-1.90	0.01-0.20	0.05-0.10	Moderate	.28	.32		
	52-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HpA:										
Houcktown-------	0-8	12-20	1.35-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	8-35	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.32	.37		
	35-51	27-37	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	51-80	23-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HpB:										
Houcktown-------	0-10	12-20	1.35-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	10-30	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.32	.37		
	30-50	27-37	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	50-80	23-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (K_{sat})	Available water capacity	Shrink-swell potential	Erosion factors			Wind erodi-bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in	Pct				
HrB:										
Houcktown-------	0-9	12-20	1.35-1.50	0.60-2.00	0.18-0.22	Low	.37	.37	4	5
	9-21	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.32	.37		
	21-45	27-37	1.70-1.90	0.06-0.60	0.06-0.10	Moderate	.32	.37		
	45-80	27-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Glynwood--------	0-7	27-38	1.35-1.55	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	6
	7-36	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	36-47	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	47-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Jenera----------	0-8	10-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.20	.20	5	3
	8-47	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Low	.32	.32		
	47-58	15-35	1.50-1.70	0.20-0.60	0.09-0.12	Low	.37	.37		
	58-80	27-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HsA:										
Hoytville-------	0-9	27-40	1.25-1.50	0.20-2.00	0.19-0.23	Moderate	.28	.28	5	7
	9-41	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	41-60	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	60-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
HtA:										
Hoytville-------	0-8	40-48	1.30-1.55	0.20-0.60	0.10-0.14	Moderate	.24	.24	5	4
	8-41	40-55	1.35-1.60	0.20-0.60	0.08-0.13	Moderate	.28	.32		
	41-64	35-50	1.40-1.75	0.06-0.20	0.05-0.10	Moderate	.32	.37		
	64-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
JeA:										
Jenera----------	0-10	10-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.20	.20	5	3
	10-37	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Low	.32	.32		
	37-50	15-35	1.50-1.70	0.20-0.60	0.09-0.12	Low	.37	.37		
	50-80	25-35	1.65-1.75	0.06-0.60	0.06-0.10	Moderate	.32	.37		
JeB:										
Jenera----------	0-8	10-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.20	.20	5	3
	8-47	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Low	.32	.32		
	47-58	15-35	1.50-1.70	0.20-0.60	0.09-0.12	Low	.37	.37		
	58-80	25-35	1.65-1.75	0.06-0.60	0.06-0.10	Moderate	.32	.37		
JfB:										
Jenera----------	0-9	10-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.20	.20	5	3
	9-21	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Low	.32	.32		
	21-59	15-35	1.50-1.70	0.20-0.60	0.09-0.12	Low	.37	.37		
	59-80	27-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Shinrock--------	0-8	18-27	1.30-1.50	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	8-24	35-45	1.35-1.70	0.20-0.60	0.10-0.16	Moderate	.37	.37		
	24-40	8-40	1.40-1.65	0.20-2.00	0.10-0.14	Low	.37	.37		
	40-67	8-40	1.30-1.60	0.20-2.00	0.10-0.14	Low	.37	.37		
	67-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
JoA:										
Joliet----------	0-9	20-27	1.10-1.30	0.60-2.00	0.17-0.24	Low	.28	.32	1	6
	9-18	10-35	1.40-1.60	0.60-2.00	0.17-0.24	Low	.32	.32		
	18-20	---	---	0.00-0.60	---	---	---	---		
KnA:										
Knoxdale--------	0-11	18-27	1.20-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	5	6
	11-47	18-35	1.25-1.60	0.60-2.00	0.17-0.22	Low	.37	.37		
	47-80	15-27	1.20-1.60	0.60-6.00	0.12-0.18	Low	.28	.32		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in	Pct				
LbA:										
Lamberjack------	0-11	10-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.32	4	5
	11-39	18-35	1.35-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	39-44	15-32	1.40-1.60	0.60-2.00	0.10-0.14	Low	.28	.32		
	44-62	2-15	1.50-1.70	6.00-20.00	0.08-0.12	Low	.15	.20		
	62-80	20-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
LcA:										
Lamberjack------	0-11	10-27	1.30-1.45	0.60-2.00	0.18-0.22	Low	.28	.32	4	5
	11-36	18-35	1.35-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	36-45	15-32	1.40-1.60	0.60-2.00	0.10-0.14	Low	.28	.32		
	45-60	2-15	1.50-1.70	6.00-20.00	0.08-0.12	Low	.15	.20		
	60-80	20-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
LuB2:										
Lucas-----------	0-7	27-40	1.35-1.55	0.20-0.60	0.16-0.19	Moderate	.37	.37	5	7
	7-23	45-60	1.35-1.65	0.01-0.20	0.12-0.14	Moderate	.28	.28		
	23-42	45-60	1.35-1.65	0.01-0.20	0.12-0.14	Moderate	.28	.28		
	42-80	35-60	1.45-1.70	0.01-0.20	0.08-0.12	Moderate	.32	.32		
LyE:										
Lybrand---------	0-8	18-27	1.35-1.55	0.60-2.00	0.20-0.24	Low	.43	.43	4	6
	8-29	35-50	1.55-1.75	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	29-47	27-40	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	47-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
MbA:										
Medway----------	0-12	18-27	1.20-1.45	0.60-2.00	0.20-0.24	Low	.28	.28	5	6
	12-50	18-32	1.20-1.50	0.60-2.00	0.14-0.18	Low	.32	.37		
	50-66	5-27	1.20-1.60	0.60-6.00	0.11-0.15	Low	.28	.32		
	66-80	5-27	1.20-1.60	0.60-6.00	0.08-0.15	Low	.28	.32		
McA:										
Medway----------	0-10	18-27	1.20-1.45	0.60-2.00	0.20-0.24	Low	.28	.28	5	6
	10-55	18-32	1.20-1.50	0.60-2.00	0.14-0.18	Low	.32	.37		
	55-72	5-27	1.20-1.60	0.60-6.00	0.11-0.15	Low	.28	.32		
	72-74	---	---	0.00-0.60	---	---	---	---		
MeA:										
Mermill---------	0-9	14-27	1.25-1.50	0.60-2.00	0.18-0.24	Low	.28	.28	4	6
	9-28	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	28-57	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	57-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MfA:										
Mermill---------	0-8	27-32	1.35-1.55	0.60-2.00	0.16-0.20	Moderate	.37	.37	4	7
	8-30	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	30-47	27-42	1.60-1.80	0.01-0.20	0.06-0.10	Moderate	.28	.32		
	47-80	27-42	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.28	.32		
MgA:										
Millsdale-------	0-13	27-35	1.30-1.50	0.60-2.00	0.17-0.22	Moderate	.28	.32	2	7
	13-35	35-45	1.40-1.65	0.20-0.60	0.12-0.16	Moderate	.28	.32		
	35-37	---	---	0.00-0.60	---	---	---	---		
MnA:										
Milton----------	0-10	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	10-21	35-50	1.45-1.65	0.20-0.60	0.12-0.18	Moderate	.32	.37		
	21-29	40-60	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	29-31	---	---	0.00-0.60	---	---	---	---		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodibility group
	In	Pct	g/cc	In/hr	In/in	Pct				
MpD3:										
Morley----------	0-6	27-40	1.40-1.60	0.20-0.60	0.17-0.20	Moderate	.37	.37	4	6
	6-14	35-50	1.45-1.70	0.06-0.60	0.11-0.15	Moderate	.28	.32		
	14-39	27-40	1.70-1.90	0.06-0.60	0.07-0.15	Moderate	.28	.32		
	39-80	27-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
MrA:										
Morley----------	0-8	16-27	1.35-1.55	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-24	35-42	1.55-1.70	0.06-0.60	0.11-0.15	Moderate	.28	.32		
	24-45	27-40	1.70-1.90	0.06-0.60	0.07-0.15	Moderate	.28	.32		
	45-66	22-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
	66-68	---	---	0.00-0.60	---	---	---	---		
MsB:										
Morley----------	0-9	16-27	1.35-1.55	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	9-34	35-42	1.55-1.70	0.06-0.60	0.11-0.15	Moderate	.28	.32		
	34-42	27-40	1.70-1.90	0.06-0.60	0.07-0.15	Moderate	.28	.32		
	42-61	22-35	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
	61-63	---	---	0.00-0.60	---	---	---	---		
Milton----------	0-8	14-27	1.30-1.50	0.60-2.00	0.18-0.23	Low	.37	.37	2	6
	8-27	35-50	1.45-1.65	0.20-0.60	0.12-0.18	Moderate	.32	.37		
	27-29	40-60	1.40-1.70	0.20-0.60	0.12-0.16	Moderate	.32	.37		
	29-31	---	---	0.00-0.60	---	---	---	---		
MvB:										
Mortimer--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	8-39	40-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.28	.28		
	39-49	40-60	1.60-1.80	0.06-0.20	0.05-0.14	Moderate	.32	.37		
	49-80	40-60	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
MwB2:										
Mortimer--------	0-7	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.37	.37	4	7
	7-39	40-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.28	.28		
	39-52	40-60	1.60-1.80	0.06-0.20	0.05-0.14	Moderate	.32	.37		
	52-80	40-60	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
NnA:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-34	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	34-56	27-42	1.60-1.90	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	56-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
NnB:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-31	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	31-46	27-42	1.60-1.90	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	46-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
NpA:										
Nappanee--------	0-8	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	7
	8-40	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	40-56	27-42	1.60-1.90	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	56-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
NpB2:										
Nappanee--------	0-7	27-38	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43	4	7
	7-32	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	32-40	27-42	1.60-1.90	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	40-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Shrink- swell potential	Erosion factors			Wind erodi- bility group
							Kw	Kf	T	
	In	Pct	g/cc	In/hr	In/in	Pct				
NrA:										
Nappanee--------	0-8	20-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	3	6
	8-34	45-60	1.40-1.65	0.06-0.20	0.08-0.14	Moderate	.37	.37		
	34-49	27-42	1.60-1.90	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	49-80	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
OrA:										
Oshtemo---------	0-9	2-10	1.20-1.60	2.00-6.00	0.10-0.15	Low	.24	.24	5	3
	9-29	10-20	1.20-1.60	2.00-6.00	0.12-0.19	Low	.24	.32		
	29-52	5-15	1.20-1.60	2.00-6.00	0.08-0.10	Low	.17	.24		
	52-80	0-10	1.30-1.50	20.00-99.90	0.02-0.04	Low	.10	.24		
OrB:										
Oshtemo---------	0-10	2-10	1.20-1.60	2.00-6.00	0.10-0.15	Low	.24	.24	5	3
	10-27	10-20	1.20-1.60	2.00-6.00	0.12-0.19	Low	.24	.32		
	27-43	5-15	1.20-1.60	2.00-6.00	0.08-0.10	Low	.17	.24		
	43-80	0-10	1.30-1.50	20.00-99.90	0.02-0.04	Low	.10	.24		
OrC:										
Oshtemo---------	0-8	2-10	1.20-1.60	2.00-6.00	0.10-0.15	Low	.24	.24	5	3
	8-25	10-20	1.20-1.60	2.00-6.00	0.12-0.19	Low	.24	.32		
	25-52	5-15	1.20-1.60	2.00-6.00	0.08-0.10	Low	.17	.24		
	52-80	0-10	1.30-1.50	20.00-99.90	0.02-0.04	Low	.10	.24		
OsB:										
Oshtemo---------	0-11	5-15	1.15-1.60	2.00-6.00	0.12-0.15	Low	.24	.24	5	3
	11-34	10-20	1.20-1.60	2.00-6.00	0.12-0.19	Low	.24	.32		
	34-44	5-15	1.20-1.60	2.00-6.00	0.08-0.10	Low	.17	.24		
	44-75	5-10	1.30-1.50	20.00-99.90	0.02-0.04	Low	.10	.24		
	75-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
OwB:										
Ottokee---------	0-11	2-10	1.40-1.60	6.00-20.00	0.09-0.12	Low	.17	.17	5	2
	11-65	1-12	1.50-1.70	6.00-20.00	0.06-0.10	Low	.17	.17		
	65-80	1-8	1.50-1.70	6.00-20.00	0.03-0.06	Low	.15	.15		
PbA:										
Patton----------	0-12	27-35	1.15-1.35	0.60-2.00	0.21-0.23	Moderate	.28	.28	5	7
	12-48	27-35	1.25-1.45	0.60-2.00	0.18-0.20	Moderate	.43	.43		
	48-80	22-35	1.30-1.50	0.20-0.60	0.18-0.22	Moderate	.43	.43		
PmA:										
Pewamo----------	0-11	27-40	1.35-1.55	0.60-2.00	0.20-0.23	Moderate	.28	.28	5	7
	11-53	35-50	1.40-1.70	0.20-0.60	0.12-0.20	Moderate	.32	.32		
	53-80	27-40	1.50-1.70	0.20-0.60	0.14-0.18	Moderate	.37	.37		
PnA:										
Pewamo----------	0-10	27-40	1.35-1.55	0.60-2.00	0.20-0.23	Moderate	.28	.28	5	7
	10-52	35-50	1.40-1.70	0.20-0.60	0.12-0.20	Moderate	.32	.32		
	52-80	27-40	1.50-1.70	0.20-0.60	0.14-0.18	Moderate	.37	.37		
Urban land------	---	---	---	---	---	---	---	---	-	---
Pt:										
Pits------------	---	---	---	---	---	---	---	---	-	---
RcA:										
Randolph--------	0-11	16-27	1.30-1.45	0.60-2.00	0.17-0.22	Low	.37	.37	2	6
	11-25	35-50	1.40-1.65	0.20-0.60	0.13-0.16	Moderate	.28	.32		
	25-27	---	---	0.00-0.60	---	---	---	---		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (K_{sat})	Available water capacity	Shrink-swell potential	Erosion factors Kw	Kf	T	Wind erodibility group
	In	Pct	g/cc	In/hr	In/in	Pct				
RgB:										
Rawson----------	0-19	9-18	1.30-1.45	0.60-2.00	0.12-0.18	Low	.24	.28	4	3
	19-32	18-35	1.50-1.70	0.60-2.00	0.12-0.16	Low	.32	.49		
	32-36	27-50	1.60-1.80	0.01-0.20	0.05-0.10	Moderate	.32	.37		
	36-60	27-42	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
RhA:										
Rensselaer------	0-12	15-27	1.30-1.45	0.60-2.00	0.22-0.24	Low	.28	.28	5	6
	12-46	18-35	1.30-1.60	0.60-2.00	0.17-0.22	Moderate	.37	.37		
	46-54	18-27	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	54-63	2-20	1.50-1.70	0.60-2.00	0.10-0.19	Low	.37	.37		
	63-80	27-40	1.60-1.80	0.06-0.60	0.07-0.10	Moderate	.32	.37		
RnA:										
Rimer-----------	0-10	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	10-23	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	23-28	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	28-54	30-45	1.50-1.80	0.06-0.20	0.06-0.12	Moderate	.32	.37		
	54-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
RoA:										
Rimer-----------	0-11	3-15	1.40-1.60	6.00-20.00	0.08-0.14	Low	.17	.17	4	2
	11-24	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	24-45	7-18	1.50-1.70	2.00-6.00	0.12-0.17	Low	.20	.20		
	45-52	5-15	1.40-1.70	6.00-20.00	0.06-0.12	Low	.17	.17		
	52-80	25-35	1.50-1.75	0.06-0.60	0.05-0.10	Moderate	.32	.37		
RtA:										
Rossburg--------	0-13	13-27	1.20-1.50	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	13-56	18-27	1.25-1.60	0.60-2.00	0.15-0.22	Low	.37	.37		
	56-80	5-15	1.30-1.60	2.00-6.00	0.05-0.15	Low	.24	.32		
SeA:										
Shawtown--------	0-9	12-27	1.30-1.45	0.60-2.00	0.14-0.18	Low	.28	.32	4	5
	9-53	18-35	1.40-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	53-66	3-15	1.30-1.70	6.00-20.00	0.02-0.07	Low	.17	.20		
	66-80	23-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SeB:										
Shawtown--------	0-9	12-27	1.30-1.45	0.60-2.00	0.14-0.18	Low	.28	.32	4	5
	9-55	18-35	1.40-1.60	0.60-2.00	0.12-0.16	Low	.24	.28		
	55-63	3-15	1.30-1.70	6.00-20.00	0.02-0.07	Low	.17	.20		
	63-80	23-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SfB:										
Shinrock--------	0-8	18-27	1.30-1.50	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	8-36	35-45	1.35-1.70	0.20-0.60	0.10-0.16	Moderate	.37	.37		
	36-50	8-40	1.40-1.65	0.20-2.00	0.10-0.14	Low	.37	.37		
	50-80	8-40	1.30-1.60	0.20-2.00	0.10-0.14	Low	.37	.37		
SgC2:										
Shinrock--------	0-7	27-40	1.35-1.55	0.20-0.60	0.21-0.23	Moderate	.37	.37	5	7
	7-34	35-45	1.35-1.70	0.20-0.60	0.10-0.16	Moderate	.37	.37		
	34-51	8-40	1.40-1.65	0.20-2.00	0.10-0.14	Low	.37	.37		
	51-80	8-40	1.30-1.60	0.20-2.00	0.10-0.14	Low	.37	.37		
SkB:										
Shinrock--------	0-10	18-27	1.30-1.50	0.60-2.00	0.18-0.24	Low	.37	.37	5	6
	10-26	35-45	1.35-1.70	0.20-0.60	0.10-0.16	Moderate	.37	.37		
	26-43	8-40	1.40-1.65	0.20-2.00	0.10-0.14	Low	.37	.37		
	43-62	8-40	1.30-1.60	0.20-2.00	0.10-0.14	Low	.37	.37		
	62-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in	Pct				
SkB:										
Glynwood	0-8	27-38	1.35-1.55	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	7
	8-26	35-55	1.45-1.70	0.06-0.20	0.12-0.19	Moderate	.32	.37		
	26-39	27-42	1.70-1.90	0.06-0.20	0.07-0.15	Moderate	.32	.37		
	39-80	27-40	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
SmA:										
Shoals	0-11	18-27	1.30-1.60	0.60-2.00	0.20-0.24	Low	.24	.24	5	6
	11-59	18-33	1.40-1.70	0.60-2.00	0.15-0.22	Moderate	.32	.32		
	59-80	5-25	1.35-1.65	0.60-2.00	0.05-0.20	Low	.37	.37		
SnA:										
Sloan	0-11	15-27	1.20-1.40	0.60-2.00	0.19-0.24	Low	.28	.28	5	6
	11-46	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Moderate	.32	.37		
	46-80	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SoA:										
Sloan	0-11	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	7
	11-58	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Moderate	.32	.37		
	58-80	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
SpA:										
Sloan	0-10	27-35	1.30-1.50	0.60-2.00	0.18-0.22	Moderate	.28	.28	5	7
	10-39	22-35	1.25-1.55	0.20-2.00	0.15-0.19	Moderate	.32	.37		
	39-71	10-30	1.20-1.50	0.20-2.00	0.13-0.18	Low	.32	.43		
	71-73	---	---	0.00-0.60	---	---	---	---		
StB2:										
St. Clair	0-4	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	7
	4-37	40-60	1.35-1.70	0.06-0.20	0.08-0.17	Moderate	.32	.37		
	37-48	35-55	1.65-1.85	0.06-0.20	0.05-0.12	Moderate	.32	.37		
	48-80	35-55	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
StC2:										
St. Clair	0-6	27-40	1.50-1.60	0.20-0.60	0.17-0.23	Moderate	.43	.43	4	7
	6-35	40-60	1.35-1.70	0.06-0.20	0.08-0.17	Moderate	.32	.37		
	35-42	35-55	1.65-1.85	0.06-0.20	0.05-0.12	Moderate	.32	.37		
	42-80	35-55	1.70-1.90	0.01-0.20	0.01-0.05	Moderate	.32	.37		
ThA:										
Thackery	0-10	15-27	1.30-1.50	0.60-2.00	0.20-0.24	Low	.37	.37	4	6
	10-25	20-32	1.30-1.55	0.60-2.00	0.17-0.22	Low	.37	.37		
	25-56	20-35	1.30-1.60	0.60-2.00	0.13-0.18	Moderate	.32	.37		
	56-69	2-10	1.50-1.70	6.00-99.90	0.02-0.06	Low	.15	.20		
	69-80	20-35	1.80-2.00	0.01-0.60	0.01-0.05	Moderate	.32	.37		
TkA:										
Tiderishi	0-11	15-25	1.30-1.45	0.60-2.00	0.18-0.22	Low	.24	.24	5	6
	11-42	18-35	1.30-1.70	0.60-2.00	0.12-0.16	Low	.28	.32		
	42-57	15-32	1.45-1.70	0.60-2.00	0.10-0.16	Low	.28	.32		
	57-80	25-35	1.65-1.75	0.06-0.60	0.05-0.10	Moderate	.32	.37		
TnA:										
Toledo	0-9	27-40	1.40-1.60	0.20-0.60	0.17-0.23	Moderate	.28	.28	5	7
	9-50	40-60	1.40-1.70	0.06-0.20	0.09-0.13	Moderate	.28	.28		
	50-80	35-60	1.45-1.75	0.06-0.20	0.08-0.12	Moderate	.32	.32		
ToB:										
Tuscola	0-10	5-15	1.30-1.65	2.00-6.00	0.11-0.13	Low	.17	.17	5	2
	10-55	18-35	1.30-1.70	0.60-2.00	0.15-0.20	Low	.32	.32		
	55-80	5-35	1.30-1.70	0.60-2.00	0.14-0.18	Low	.32	.32		

Table 29.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (K_{sat})	Available water capacity	Shrink- swell potential	Erosion factors Kw	Kf	T	Wind erodi- bility group
	In	Pct	g/cc	In/hr	In/in	Pct				
TpA:										
Tuscola---------	0-8	8-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.24	.24	5	3
	8-40	18-35	1.30-1.70	0.60-2.00	0.15-0.20	Low	.32	.32		
	40-80	5-35	1.30-1.70	0.60-2.00	0.14-0.18	Low	.32	.32		
TpB:										
Tuscola---------	0-11	8-20	1.30-1.65	2.00-6.00	0.13-0.22	Low	.24	.24	5	3
	11-44	18-35	1.30-1.70	0.60-2.00	0.15-0.20	Low	.32	.32		
	44-80	5-35	1.30-1.70	0.60-2.00	0.14-0.18	Low	.32	.32		
TuB:										
Tuscola---------	0-9	8-20	1.30-1.65	0.60-2.00	0.20-0.22	Low	.32	.32	5	5
	9-43	18-35	1.30-1.70	0.60-2.00	0.15-0.20	Low	.32	.32		
	43-80	5-35	1.30-1.70	0.60-2.00	0.14-0.18	Low	.32	.32		
UcA:										
Udorthents------	---	---	---	---	---	---	---	---	-	---
UcD:										
Udorthents------	---	---	---	---	---	---	---	---	-	---
Ur:										
Urban land------	---	---	---	---	---	---	---	---	-	---
VaA:										
Vanlue----------	0-10	10-25	1.30-1.45	0.60-2.00	0.18-0.22	Low	.32	.32	5	5
	10-35	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Low	.32	.32		
	35-59	10-35	1.50-1.70	0.20-0.60	0.08-0.14	Low	.37	.37		
	59-80	22-35	1.65-1.75	0.06-0.60	0.05-0.10	Moderate	.32	.37		
VeA:										
Vaughnsville----	0-8	18-27	1.30-1.50	0.60-2.00	0.19-0.23	Low	.32	.32	5	6
	8-20	18-35	1.40-1.60	0.60-2.00	0.14-0.18	Low	.32	.32		
	20-36	5-27	1.45-1.75	0.60-6.00	0.12-0.18	Low	.24	.28		
	36-45	27-42	1.50-1.80	0.06-0.60	0.10-0.16	Moderate	.32	.37		
	45-80	27-42	1.80-2.00	0.01-0.20	0.01-0.05	Moderate	.32	.37		
WeA:										
Westland--------	0-10	15-27	1.30-1.60	0.60-2.00	0.19-0.24	Low	.24	.24	4	6
	10-52	24-35	1.40-1.65	0.60-2.00	0.13-0.19	Moderate	.28	.32		
	52-59	5-30	1.55-1.70	0.60-2.00	0.07-0.17	Low	.24	.37		
	59-80	1-10	1.50-1.70	20.00-99.90	0.01-0.04	Low	.05	.10		
Rensselaer------	0-19	15-27	1.30-1.45	0.60-2.00	0.22-0.24	Low	.28	.28	5	6
	19-38	20-35	1.30-1.60	0.60-2.00	0.17-0.22	Moderate	.37	.37		
	38-58	18-35	1.40-1.60	0.60-2.00	0.15-0.19	Moderate	.37	.37		
	58-80	2-20	1.50-1.70	0.60-2.00	0.10-0.19	Low	.37	.37		

Table 30.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
AdA:					
Adrian----------	0-26	5.1-7.3	55-75	125-200	0
	26-80	6.1-8.4	0.0-2.0	1.0-10	0-40
AkA:					
Alvada----------	0-10	5.6-7.3	3.0-8.0	13-32	0
	10-39	6.1-7.8	0.5-2.0	8.0-29	0-5
	39-46	6.1-7.8	0.5-1.0	8.0-21	0-15
	46-50	7.4-8.4	0.0-0.5	2.0-12	5-30
	50-80	7.4-8.4	0.0-0.5	9.0-22	15-30
AmA:					
Alvada----------	0-11	5.6-7.3	3.0-8.0	13-32	0
	11-42	6.1-7.8	0.5-2.0	8.0-29	0-5
	42-46	6.1-7.8	0.5-1.0	8.0-21	0-15
	46-53	7.4-8.4	0.0-0.5	2.0-12	5-30
	53-80	7.4-8.4	0.0-0.5	9.0-22	15-30
Urban land------	---	---	---	---	---
AnA:					
Aquents---------	0-6	5.6-7.3	1.0-3.0	17-34	0
	6-30	6.6-7.8	0.0-1.0	15-34	0-5
	30-80	7.4-8.4	0.0-1.0	11-25	15-30
ApB:					
Arkport---------	0-10	4.5-7.3	0.5-2.0	3.0-13	0-1
	10-15	4.5-7.3	0.0-1.0	1.0-11	0-1
	15-69	5.1-7.3	0.0-1.0	1.0-11	0-1
	69-80	5.6-8.4	0.0-0.5	1.0-4.0	0-5
ArA:					
Aurand----------	0-11	5.6-7.3	2.0-6.0	8.0-28	0
	11-29	5.6-7.8	0.5-2.0	8.0-29	0-5
	29-33	6.6-7.8	0.0-1.0	8.0-23	0-5
	33-48	7.4-8.4	0.0-0.5	11-23	0-20
	48-80	7.4-8.4	0.0-0.5	11-23	15-30
AsA:					
Aurand----------	0-10	5.6-7.3	2.0-6.0	8.0-28	0
	10-26	5.6-7.8	0.5-2.0	8.0-29	0-5
	26-35	6.6-7.8	0.0-1.0	8.0-23	0-5
	35-50	7.4-8.4	0.0-0.5	11-23	0-20
	50-80	7.4-8.4	0.0-0.5	11-23	15-30
Urban land------	---	---	---	---	---
BgA:					
Biglick---------	0-10	6.1-7.8	1.0-3.0	10-22	0
	10-14	6.6-8.4	0.5-1.0	15-38	0-20
	14-16	---	---	---	---
Milton----------	0-10	5.1-7.3	1.0-3.0	8.0-22	0
	10-14	4.5-7.8	0.5-1.0	16-32	0
	14-24	6.1-7.8	0.0-0.5	10-27	0-15
	24-26	---	---	---	---
BgB:					
Biglick---------	0-9	6.1-7.8	1.0-3.0	10-22	0
	9-13	6.6-8.4	0.5-1.0	15-38	0-20
	13-15	---	---	---	---

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
BgB:					
Milton----------	0-8	5.1-7.3	1.0-3.0	8.0-22	0
	8-20	4.5-7.8	0.5-1.0	16-32	0
	20-26	6.1-7.8	0.0-0.5	10-27	0-15
	26-28	---	---	---	---
BnA:					
Blount----------	0-10	5.1-7.3	2.0-4.0	13-22	0
	10-37	4.5-6.5	0.0-1.0	14-30	0
	37-56	6.1-8.4	0.0-0.5	11-26	0-25
	56-80	7.4-8.4	0.0-0.5	11-25	22-35
BoA:					
Blount----------	0-9	5.1-7.3	2.0-4.0	13-22	0
	9-21	4.5-7.3	0.0-1.0	14-30	0
	21-55	6.1-8.4	0.0-0.5	11-26	0-25
	55-80	7.4-8.4	0.0-0.5	11-25	22-35
BoB:					
Blount----------	0-8	5.1-7.3	2.0-4.0	13-22	0
	8-30	4.5-6.5	0.0-1.0	14-30	0
	30-45	6.1-8.4	0.0-0.5	11-26	0-25
	45-80	7.4-8.4	0.0-0.5	11-25	22-35
BpA:					
Blount----------	0-9	5.1-7.3	2.0-4.0	13-22	0
	9-31	4.5-6.5	0.0-1.0	14-30	0
	31-43	6.1-8.4	0.0-0.5	11-26	0-25
	43-80	7.4-8.4	0.0-0.5	11-25	22-35
Houcktown-------	0-9	5.6-7.3	1.0-3.0	6.0-18	0
	9-28	5.6-7.8	0.5-2.0	7.0-25	0-5
	28-52	6.6-8.4	0.0-0.5	12-23	0-30
	52-80	7.4-8.4	0.0-0.5	9.0-22	20-30
BrA:					
Blount----------	0-9	5.1-7.3	2.0-4.0	13-22	0
	9-26	4.5-6.5	0.0-1.0	14-30	0
	26-52	6.1-8.4	0.0-0.5	11-26	0-25
	52-80	7.4-8.4	0.0-0.5	11-25	22-35
Jenera----------	0-9	5.6-7.3	1.0-3.0	6.0-18	0
	9-31	5.6-7.3	0.5-1.0	8.0-23	0
	31-44	6.1-7.8	0.5-1.0	7.0-23	0-5
	44-80	7.4-8.4	0.0-0.5	10-22	15-35
BuA:					
Blount----------	0-10	5.1-7.3	2.0-4.0	13-22	0
	10-28	4.5-6.5	0.0-1.0	14-30	0
	28-42	6.1-8.4	0.0-0.5	11-26	0-25
	42-80	7.4-8.4	0.0-0.5	11-25	22-35
Urban land------	---	---	---	---	---
ChC:					
Channahon-------	0-7	6.1-8.4	2.0-4.0	12-24	0-15
	7-13	6.1-8.4	0.0-1.0	8.0-23	0-15
	13-15	---	---	---	---
Biglick---------	0-7	6.1-7.8	1.0-3.0	10-22	0
	7-12	6.6-8.4	0.5-1.0	15-38	0-20
	12-14	---	---	---	---

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
CoA:					
Colwood---------	0-11	6.1-7.8	3.0-8.0	9.0-32	0
	11-56	6.1-7.8	0.5-1.0	8.0-23	0-5
	56-80	7.4-8.4	0.0-0.5	2.0-8.0	5-20
CtA:					
Cygnet----------	0-11	5.1-7.3	1.0-3.0	7.0-18	0
	11-30	5.1-7.3	0.5-1.0	8.0-23	0
	30-53	6.6-7.8	0.5-1.0	3.0-17	0-5
	53-80	7.4-8.4	0.0-0.5	11-26	20-35
CuA:					
Cygnet----------	0-10	5.1-7.3	1.0-3.0	7.0-18	0
	10-42	5.1-7.3	0.5-1.0	8.0-23	0
	42-57	6.6-7.8	0.5-1.0	3.0-17	0-5
	57-80	7.4-8.4	0.0-0.5	11-26	20-35
Urban land------	---	---	---	---	---
DbA:					
Darroch---------	0-11	5.6-7.3	2.0-4.0	9.0-24	0
	11-44	5.6-7.3	0.5-1.0	8.0-23	0
	44-80	7.4-8.4	0.0-0.5	2.0-13	10-40
DeA:					
Del Rey---------	0-10	4.5-7.3	2.0-3.0	10-22	0
	10-37	4.5-7.8	0.0-1.0	14-29	0-10
	37-80	7.4-8.4	0.0-0.5	9.0-21	5-40
DfA:					
Del Rey---------	0-9	4.5-7.3	2.0-3.0	10-22	0
	9-41	4.5-7.8	0.0-1.0	14-29	0-10
	41-80	7.4-8.4	0.0-0.5	9.0-21	5-40
Blount----------	0-8	5.1-7.3	2.0-4.0	13-22	0
	8-27	4.5-6.5	0.0-1.0	14-30	0
	27-44	6.1-7.8	0.0-0.5	11-26	0-25
	44-80	7.4-8.4	0.0-0.5	11-25	22-35
DuB:					
Dunbridge-------	0-8	6.1-7.8	2.0-4.0	6.0-13	0
	8-25	6.1-7.8	0.5-1.0	8.0-20	0-15
	25-27	---	---	---	---
EmA:					
Elliott---------	0-12	5.6-7.3	3.0-6.0	18-28	0
	12-36	5.6-7.8	0.0-1.0	14-32	0-5
	36-80	7.4-8.4	0.0-0.5	11-25	10-40
FbA:					
Flatrock--------	0-9	5.6-7.3	1.0-3.0	9.0-22	0
	9-44	6.1-7.8	0.5-1.0	8.0-23	0-5
	44-80	6.6-8.4	0.5-1.0	7.0-23	0-20
FcA:					
Flatrock--------	0-11	5.6-7.3	1.0-3.0	9.0-22	0
	11-52	6.1-7.8	0.5-1.0	8.0-23	0-5
	52-80	6.6-8.4	0.5-1.0	7.0-23	0-20

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
FdA:					
Flatrock--------	0-11	5.6-7.3	1.0-3.0	9.0-22	0
	11-52	6.1-7.8	0.5-1.0	8.0-23	0-5
	52-64	6.6-8.4	0.5-1.0	7.0-23	0-20
	64-66	---	---	---	---
FoA:					
Fox-------------	0-9	5.1-7.3	1.0-3.0	6.0-16	0
	9-30	5.6-7.8	0.0-0.5	7.0-22	0-15
	30-80	7.4-8.4	0.0-0.5	0.0-4.0	5-45
FoB:					
Fox-------------	0-9	5.1-7.3	1.0-3.0	6.0-16	0
	9-37	5.6-7.8	0.0-0.5	7.0-22	0-15
	37-80	7.4-8.4	0.0-0.5	0.0-4.0	5-45
FoC2:					
Fox-------------	0-6	5.1-7.3	0.5-2.0	5.0-14	0
	6-32	5.6-7.8	0.0-0.5	7.0-22	0-15
	32-80	7.4-8.4	0.0-0.5	0.0-4.0	5-45
FsA:					
Fulton----------	0-8	5.1-7.3	2.0-3.0	10-22	0
	8-42	5.1-7.8	0.5-1.0	19-38	0-5
	42-60	7.4-8.4	0.0-0.5	14-37	5-20
	60-80	7.4-8.4	0.0-0.5	14-37	10-30
FtA:					
Fulton----------	0-10	5.1-7.3	2.0-3.0	10-22	0
	10-25	5.1-7.8	0.5-1.0	19-38	0-5
	25-45	7.4-8.4	0.0-0.5	14-37	5-20
	45-68	7.4-8.4	0.0-0.5	14-37	10-30
	68-80	7.4-8.4	0.0-0.5	12-26	20-30
GaB:					
Gallman---------	0-10	5.6-7.3	1.0-3.0	6.0-21	0
	10-61	4.5-7.3	0.0-1.0	6.0-20	0
	61-80	6.1-8.4	0.0-0.5	1.0-10	0-20
GfA:					
Gilford---------	0-12	5.6-7.3	10-20	24-52	0
	12-27	5.6-7.3	0.0-1.0	4.0-13	0
	27-36	6.1-7.3	0.0-0.5	1.0-9.0	0
	36-80	6.6-8.4	0.0-0.5	1.0-6.0	0-30
GmA:					
Glynwood--------	0-10	5.1-7.3	1.0-3.0	8.0-22	0
	10-31	4.5-7.8	0.5-1.0	15-35	0-10
	31-40	6.1-8.4	0.0-0.5	11-27	0-25
	40-61	7.4-8.4	0.0-0.5	11-25	22-35
	61-63	---	---	---	---
GnB:					
Glynwood--------	0-9	5.1-7.3	1.0-3.0	8.0-22	0
	9-37	4.5-7.8	0.5-1.0	15-35	0-10
	37-47	6.1-8.4	0.0-0.5	11-27	0-25
	47-80	7.4-8.4	0.0-0.5	11-25	22-35
GpB2:					
Glynwood--------	0-7	5.1-7.3	0.5-2.0	12-27	0
	7-31	4.5-7.8	0.5-1.0	15-35	0-10
	31-40	6.1-8.4	0.0-0.5	11-27	0-25
	40-80	7.4-8.4	0.0-0.5	11-25	22-35

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
GpC2:					
Glynwood--------	0-6	5.1-7.3	0.5-2.0	12-27	0
	6-32	4.5-7.8	0.5-1.0	15-35	0-10
	32-41	6.1-8.4	0.0-0.5	11-27	0-25
	41-80	7.4-8.4	0.0-0.5	11-25	22-35
GsB:					
Glynwood--------	0-7	5.1-7.3	0.5-2.0	12-27	0
	7-36	4.5-7.8	0.5-1.0	15-35	0-10
	36-47	6.1-8.4	0.0-0.5	11-27	0-25
	47-80	7.4-8.4	0.0-0.5	11-25	22-35
Blount----------	0-8	5.1-7.3	2.0-4.0	13-22	0
	8-32	4.5-6.5	0.0-1.0	14-30	0
	32-44	6.1-8.4	0.0-0.5	11-26	0-25
	44-80	7.4-8.4	0.0-0.5	11-25	22-35
Houcktown-------	0-9	5.6-7.3	1.0-3.0	6.0-18	0
	9-37	5.6-7.8	0.5-2.0	7.0-25	0-5
	37-45	6.6-8.4	0.0-0.5	12-23	0-30
	45-80	7.4-8.4	0.0-0.5	9.0-22	20-30
GuB:					
Glynwood--------	0-10	5.1-7.3	1.0-3.0	8.0-22	0
	10-36	4.5-7.8	0.5-1.0	15-35	0-10
	36-49	6.1-8.4	0.0-0.5	11-27	0-25
	49-80	7.4-8.4	0.0-0.5	11-25	22-35
Urban land------	---	---	---	---	---
HaA:					
Harrod----------	0-13	6.6-7.8	3.0-6.0	13-28	0-10
	13-33	6.6-8.4	1.0-3.0	10-26	0-10
	33-35	---	---	---	---
HkA:					
Haskins---------	0-11	5.1-7.3	1.0-2.0	5.0-15	0
	11-37	5.1-7.3	0.0-0.5	7.0-21	0
	37-54	6.1-7.8	0.0-0.5	11-26	0-15
	54-80	7.4-8.4	0.0-0.5	11-26	18-30
HnA:					
Haskins---------	0-9	5.1-7.3	1.0-3.0	6.0-18	0
	9-36	5.1-7.3	0.0-0.5	7.0-21	0
	36-52	6.1-7.8	0.0-0.5	11-26	0-30
	52-80	7.4-8.4	0.0-0.5	11-26	18-30
HpA:					
Houcktown-------	0-8	5.6-7.3	1.0-3.0	6.0-18	0
	8-35	5.6-7.8	0.5-2.0	7.0-25	0-5
	35-51	6.6-8.4	0.0-0.5	12-23	0-30
	51-80	7.4-8.4	0.0-0.5	9.0-22	20-30
HpB:					
Houcktown-------	0-10	5.6-7.3	1.0-3.0	6.0-18	0
	10-30	5.6-7.8	0.5-2.0	7.0-25	0-5
	30-50	6.6-8.4	0.0-0.5	12-23	0-30
	50-80	7.4-8.4	0.0-0.5	9.0-22	20-30

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
HrB:					
Houcktown-------	0-9	5.6-7.3	1.0-3.0	6.0-18	0
	9-21	5.6-7.8	0.5-2.0	7.0-25	0-5
	21-45	6.6-8.4	0.0-0.5	12-23	0-30
	45-80	7.4-8.4	0.0-0.5	9.0-22	20-30
Glynwood--------	0-7	5.1-7.3	0.5-2.0	12-27	0
	7-36	4.5-7.8	0.5-1.0	15-35	0-10
	36-47	6.1-8.4	0.0-0.5	11-27	0-25
	47-80	7.4-8.4	0.0-0.5	11-25	22-35
Jenera----------	0-8	5.6-7.3	1.0-3.0	6.0-18	0
	8-47	5.6-7.3	0.5-1.0	8.0-23	0
	47-58	6.1-7.8	0.5-1.0	7.0-23	0-15
	58-80	7.4-8.4	0.0-0.5	10-22	15-35
HsA:					
Hoytville-------	0-9	6.1-7.3	3.0-6.0	17-35	0
	9-41	6.1-7.8	0.5-1.0	16-32	0-15
	41-60	7.4-8.4	0.5-1.0	14-30	15-30
	60-80	7.4-8.4	0.0-0.5	11-26	15-30
HtA:					
Hoytville-------	0-8	6.1-7.3	3.0-6.0	24-40	0
	8-41	6.1-7.8	0.5-1.0	16-32	0-15
	41-64	7.4-8.4	0.5-1.0	14-30	15-30
	64-80	7.4-8.4	0.0-0.5	11-26	15-30
JeA:					
Jenera----------	0-10	5.6-7.3	1.0-3.0	6.0-18	0
	10-37	5.6-7.3	0.5-1.0	8.0-23	0
	37-50	6.1-7.8	0.5-1.0	7.0-23	0-15
	50-80	7.4-8.4	0.0-0.5	10-22	15-35
JeB:					
Jenera----------	0-8	5.6-7.3	1.0-3.0	6.0-18	0
	8-47	5.6-7.3	0.5-1.0	8.0-23	0
	47-58	6.1-7.8	0.5-1.0	7.0-23	0-15
	58-80	7.4-8.4	0.0-0.5	10-22	15-35
JfB:					
Jenera----------	0-9	5.6-7.3	1.0-3.0	6.0-18	0
	9-21	5.6-7.3	0.5-1.0	8.0-23	0
	21-59	6.1-7.8	0.5-1.0	7.0-23	0-15
	59-80	7.4-8.4	0.0-0.5	10-22	15-35
Shinrock--------	0-8	5.6-7.3	1.0-3.0	8.0-22	0
	8-24	5.1-7.8	0.5-1.0	15-29	0-5
	24-40	6.6-8.4	0.0-0.5	3.0-25	0-15
	40-67	7.4-8.4	0.0-0.5	3.0-25	10-25
	67-80	7.4-8.4	0.0-0.5	11-25	20-35
JoA:					
Joliet----------	0-9	6.1-8.4	4.0-5.0	18-26	0-20
	9-18	6.1-8.4	1.0-3.0	6.0-26	0-20
	18-20	---	---	---	---
KnA:					
Knoxdale--------	0-11	6.1-7.3	1.0-3.0	9.0-22	0
	11-47	6.1-7.8	0.5-1.0	7.0-23	0-5
	47-80	6.6-8.4	0.0-0.5	6.0-17	0-20

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
LbA:					
Lamberjack------	0-11	5.6-7.3	2.0-4.0	8.0-24	0
	11-39	5.6-7.3	1.0-3.0	9.0-27	0
	39-44	6.1-7.8	0.5-1.0	7.0-20	0-5
	44-62	7.4-8.4	0.0-0.5	1.0-10	15-35
	62-80	7.4-8.4	0.0-0.5	8.0-22	15-35
LcA:					
Lamberjack------	0-11	5.6-7.3	2.0-4.0	8.0-24	0
	11-36	5.6-7.3	1.0-3.0	9.0-27	0
	36-45	6.1-7.8	0.5-1.0	7.0-20	0-5
	45-60	7.4-8.4	0.0-0.5	1.0-10	15-35
	60-80	7.4-8.4	0.0-0.5	8.0-22	15-35
Urban land------	---	---	---	---	---
LuB2:					
Lucas-----------	0-7	5.1-7.3	1.0-3.0	13-30	0
	7-23	5.1-7.3	0.5-1.0	19-38	0
	23-42	6.1-8.4	0.0-0.5	18-37	0-15
	42-80	7.4-8.4	0.0-0.5	14-37	10-30
LyE:					
Lybrand---------	0-8	5.1-7.3	2.0-4.0	11-24	0
	8-29	5.1-7.8	0.5-2.0	15-31	0-20
	29-47	7.4-8.4	0.0-0.5	11-25	10-35
	47-80	7.4-8.4	0.0-0.5	11-25	20-35
MbA:					
Medway----------	0-12	6.1-7.8	3.0-6.0	13-28	0
	12-50	6.1-7.8	0.5-1.0	7.0-21	0-5
	50-66	6.1-8.4	0.5-1.0	3.0-18	0-10
	66-80	6.1-8.4	0.0-0.5	2.0-18	0-20
McA:					
Medway----------	0-10	6.1-7.8	3.0-6.0	13-28	0
	10-55	6.1-7.8	0.5-1.0	7.0-21	0-5
	55-72	6.1-8.4	0.5-1.0	3.0-18	0-20
	72-74	---	---	---	---
MeA:					
Mermill---------	0-9	5.6-7.3	3.0-6.0	12-28	0
	9-28	5.6-7.3	0.5-1.0	8.0-23	0
	28-57	6.6-8.4	0.0-0.5	11-26	0-30
	57-80	7.4-8.4	0.0-0.5	11-26	15-30
MfA:					
Mermill---------	0-8	5.6-7.3	3.0-6.0	17-31	0
	8-30	5.6-7.3	0.5-1.0	8.0-23	0
	30-47	6.6-8.4	0.0-0.5	11-26	0-30
	47-80	7.4-8.4	0.0-0.5	11-26	15-30
MgA:					
Millsdale-------	0-13	6.1-7.3	4.0-7.0	19-35	0
	13-35	6.1-8.4	0.5-2.0	15-31	0-15
	35-37	---	---	---	---
MnA:					
Milton----------	0-10	5.1-7.3	1.0-3.0	7.0-22	0
	10-21	4.5-7.8	0.5-1.0	15-32	0
	21-29	6.1-7.8	0.0-0.5	10-28	0-15
	29-31	---	---	---	---

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
MpD3:					
Morley----------	0-6	5.1-7.3	0.5-2.0	12-28	0
	6-14	4.5-7.3	0.5-1.0	15-32	0
	14-39	7.4-8.4	0.5-1.0	12-26	10-20
	39-80	7.4-8.4	0.0-1.0	11-23	20-30
MrA:					
Morley----------	0-8	5.1-7.3	2.0-3.0	11-22	0
	8-24	4.5-7.3	0.5-1.0	17-27	0
	24-45	7.4-8.4	0.5-1.0	12-23	10-20
	45-66	7.4-8.4	0.0-1.0	9.0-23	15-25
	66-68	---	---	---	---
MsB:					
Morley----------	0-9	5.1-7.3	2.0-3.0	11-22	0
	9-34	4.5-7.3	0.5-1.0	17-27	0
	34-42	7.4-8.4	0.5-1.0	12-23	10-20
	42-61	7.4-8.4	0.0-1.0	9.0-23	15-25
	61-63	---	---	---	---
Milton----------	0-8	5.1-7.3	1.0-3.0	7.0-22	0
	8-27	4.5-7.8	0.5-1.0	15-32	0
	27-29	6.1-7.8	0.0-0.5	10-28	0-15
	29-31	---	---	---	---
MvB:					
Mortimer--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-39	5.1-7.8	0.5-1.0	17-38	0-10
	39-49	7.4-8.4	0.0-0.5	16-37	15-30
	49-80	7.4-8.4	0.0-0.5	16-37	15-30
MwB2:					
Mortimer--------	0-7	5.1-7.3	0.5-2.0	12-27	0
	7-39	5.1-7.8	0.5-1.0	17-38	0-10
	39-52	7.4-8.4	0.0-0.5	16-37	15-30
	52-80	7.4-8.4	0.0-0.5	16-37	15-30
NnA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-34	5.1-7.8	0.0-1.0	18-38	0-5
	34-56	7.4-8.4	0.0-0.5	11-26	15-30
	56-80	7.4-8.4	0.0-0.5	11-26	15-30
NnB:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-31	5.1-7.8	0.0-1.0	18-38	0-5
	31-46	7.4-8.4	0.0-0.5	11-26	15-30
	46-80	7.4-8.4	0.0-0.5	11-26	15-30
NpA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	13-29	0
	8-40	5.1-7.8	0.0-1.0	18-38	0-5
	40-56	7.4-8.4	0.0-0.5	11-26	15-30
	56-80	7.4-8.4	0.0-0.5	11-26	15-30
NpB2:					
Nappanee--------	0-7	5.1-7.3	0.5-2.0	12-27	0
	7-32	5.1-7.8	0.0-1.0	18-38	0-5
	32-40	7.4-8.4	0.0-0.5	11-26	15-30
	40-80	7.4-8.4	0.0-0.5	11-26	15-30

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
NrA:					
Nappanee--------	0-8	5.1-7.3	1.0-3.0	10-22	0
	8-34	5.1-7.8	0.0-1.0	18-38	0-5
	34-49	7.4-8.4	0.0-0.5	11-26	15-30
	49-80	7.4-8.4	0.0-0.5	11-26	15-30
Urban land------	---	---	---	---	---
OrA:					
Oshtemo---------	0-9	5.1-7.3	0.5-3.0	2.0-12	0
	9-29	5.1-7.3	0.0-0.5	4.0-12	0
	29-52	5.1-7.3	0.0-0.5	2.0-10	0
	52-80	7.4-8.4	0.0-0.5	0.0-10	10-25
OrB:					
Oshtemo---------	0-10	5.1-7.3	0.5-3.0	2.0-12	0
	10-27	5.1-7.3	0.0-0.5	4.0-12	0
	27-43	5.1-7.3	0.0-0.5	2.0-10	0
	43-80	7.4-8.4	0.0-0.5	0.0-10	10-25
OrC:					
Oshtemo---------	0-8	5.1-7.3	0.5-3.0	2.0-12	0
	8-25	5.1-7.3	0.0-0.5	4.0-12	0
	25-52	5.1-7.3	0.0-0.5	2.0-10	0
	52-80	7.4-8.4	0.0-0.5	0.0-10	10-25
OsB:					
Oshtemo---------	0-11	5.1-7.3	0.5-3.0	3.0-15	0
	11-34	5.1-7.3	0.0-0.5	4.0-12	0
	34-44	5.1-7.3	0.0-0.5	2.0-10	0
	44-75	7.4-8.4	0.0-0.5	0.0-10	10-25
	75-80	7.4-8.4	0.0-0.5	11-26	18-30
OwB:					
Ottokee---------	0-11	5.6-7.3	0.5-2.0	2.0-10	0
	11-65	5.6-7.3	0.0-1.0	1.0-9.0	0
	65-80	6.1-8.4	0.0-0.5	1.0-6.0	0-12
PbA:					
Patton----------	0-12	6.1-7.3	3.0-5.0	17-31	0
	12-48	6.1-7.8	1.0-3.0	13-27	0-10
	48-80	7.4-8.4	0.0-1.0	9.0-23	10-25
PmA:					
Pewamo----------	0-11	5.6-7.3	3.0-5.0	17-34	0
	11-53	5.6-7.8	0.5-2.0	15-34	0-5
	53-80	7.4-8.4	0.0-1.0	11-25	15-30
PnA:					
Pewamo----------	0-10	5.6-7.3	3.0-5.0	17-34	0
	10-52	5.6-7.8	0.5-2.0	15-34	0-5
	52-80	7.4-8.4	0.0-1.0	11-25	15-30
Urban land------	---	---	---	---	---
Pt:					
Pits------------	---	---	---	---	---
RcA:					
Randolph--------	0-11	5.1-7.3	1.0-3.0	8.0-22	0
	11-25	5.1-7.8	0.0-0.5	14-31	0-15
	25-27	---	---	---	---

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
RgB:					
Rawson----------	0-19	5.1-7.3	0.5-3.0	5.0-17	0
	19-32	5.1-7.8	0.5-1.0	8.0-23	0
	32-36	6.1-8.4	0.0-0.5	11-31	0-30
	36-60	7.4-8.4	0.0-0.5	11-26	17-30
RhA:					
Rensselaer------	0-12	6.1-7.3	2.0-6.0	10-29	0
	12-46	6.1-7.3	0.5-2.0	9.0-25	0
	46-54	6.6-7.8	0.0-1.0	8.0-23	0-10
	54-63	7.4-8.4	0.0-0.5	1.0-13	5-25
	63-80	7.4-8.4	0.0-0.5	11-25	15-35
RnA:					
Rimer-----------	0-10	5.1-7.3	1.0-3.0	3.0-15	0
	10-23	5.1-7.3	0.5-1.0	3.0-11	0
	23-28	5.1-7.3	0.0-0.5	3.0-12	0
	28-54	6.1-7.8	0.0-0.5	12-28	0-15
	54-80	7.4-8.4	0.0-0.5	11-26	10-30
RoA:					
Rimer-----------	0-11	5.1-7.3	1.0-3.0	3.0-15	0
	11-24	5.1-7.3	0.5-1.0	3.0-11	0
	24-45	5.1-7.3	0.5-1.0	3.0-12	0
	45-52	5.1-7.8	0.0-0.5	2.0-10	0-15
	52-80	7.4-8.4	0.0-0.5	10-22	10-30
RtA:					
Rossburg--------	0-13	6.1-7.8	4.0-8.0	13-32	0
	13-56	6.1-7.8	0.5-2.0	7.0-20	0-10
	56-80	6.6-8.4	0.0-0.5	2.0-10	0-30
SeA:					
Shawtown--------	0-9	5.1-7.3	1.0-3.0	7.0-22	0
	9-53	5.1-7.3	0.0-0.5	7.0-22	0
	53-66	7.4-8.4	0.0-0.5	1.0-10	15-25
	66-80	7.4-8.4	0.0-0.5	9.0-25	15-30
SeB:					
Shawtown--------	0-9	5.1-7.3	1.0-3.0	7.0-22	0
	9-55	5.1-7.3	0.0-0.5	7.0-22	0
	55-63	7.4-8.4	0.0-0.5	1.0-10	15-25
	63-80	7.4-8.4	0.0-0.5	9.0-25	15-30
SfB:					
Shinrock--------	0-8	5.6-7.3	1.0-3.0	8.0-22	0
	8-36	5.1-7.8	0.5-1.0	15-29	0-5
	36-50	6.6-8.4	0.0-0.5	3.0-25	0-15
	50-80	7.4-8.4	0.0-0.5	3.0-25	10-25
SgC2:					
Shinrock--------	0-7	5.6-7.3	0.5-2.0	12-28	0-5
	7-34	5.1-7.8	0.5-1.0	15-29	0-5
	34-51	6.6-8.4	0.0-0.5	3.0-25	0-15
	51-80	7.4-8.4	0.0-0.5	3.0-25	10-25
SkB:					
Shinrock--------	0-10	5.6-7.3	1.0-3.0	8.0-22	0
	10-26	5.1-7.8	0.5-1.0	15-29	0-5
	26-43	6.6-8.4	0.0-0.5	3.0-25	0-15
	43-62	7.4-8.4	0.0-0.5	3.0-25	10-25
	62-80	7.4-8.4	0.0-0.5	11-25	22-35

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
SkB:					
Glynwood--------	0-8	5.1-7.3	0.5-2.0	12-27	0
	8-26	4.5-7.8	0.5-1.0	15-35	0-10
	26-39	6.1-8.4	0.0-0.5	11-27	0-25
	39-80	7.4-8.4	0.0-0.5	11-25	22-35
SmA:					
Shoals----------	0-11	6.6-7.8	2.0-4.0	12-27	0-5
	11-59	6.6-8.4	0.5-2.0	8.0-24	0-10
	59-80	6.6-8.4	0.5-2.0	3.0-19	0-25
SnA:					
Sloan-----------	0-11	6.1-7.8	3.0-6.0	12-28	0-5
	11-46	6.1-8.4	0.5-1.0	10-23	0-20
	46-80	6.6-8.4	0.0-0.5	4.0-19	0-40
SoA:					
Sloan-----------	0-11	6.1-7.8	3.0-6.0	17-33	0-5
	11-58	6.1-8.4	0.5-1.0	10-23	0-20
	58-80	6.6-8.4	0.0-0.5	4.0-19	0-40
SpA:					
Sloan-----------	0-10	6.1-7.8	3.0-6.0	17-33	0-5
	10-39	6.1-8.4	0.5-1.0	10-23	0-20
	39-71	6.6-8.4	0.0-0.5	4.0-19	0-40
	71-73	---	---	---	---
StB2:					
St. Clair-------	0-4	5.6-7.3	0.5-2.0	12-28	0
	4-37	5.6-7.8	0.0-0.5	16-37	0-10
	37-48	7.4-8.4	0.0-0.5	14-34	15-30
	48-80	7.4-8.4	0.0-0.5	14-34	15-30
StC2:					
St. Clair-------	0-6	5.6-7.3	0.5-2.0	12-28	0
	6-35	5.6-7.8	0.0-0.5	16-37	0-10
	35-42	7.4-8.4	0.0-0.5	14-34	15-30
	42-80	7.4-8.4	0.0-0.5	14-34	15-30
ThA:					
Thackery--------	0-10	5.6-7.3	1.0-3.0	8.0-22	0
	10-25	5.1-7.3	0.5-1.0	9.0-21	0
	25-56	5.1-7.8	0.0-0.5	8.0-22	0-10
	56-69	7.4-8.4	0.0-0.5	1.0-10	10-35
	69-80	7.4-8.4	0.0-0.5	8.0-22	20-35
TkA:					
Tiderishi-------	0-11	5.1-7.3	3.0-5.0	12-25	0
	11-42	5.1-7.3	0.5-1.0	8.0-23	0
	42-57	6.1-7.8	0.0-0.5	6.0-20	0-15
	57-80	7.4-8.4	0.0-0.5	10-22	15-35
TnA:					
Toledo----------	0-9	5.6-7.3	3.0-6.0	17-36	0
	9-50	6.1-7.8	0.5-1.0	17-38	0-5
	50-80	7.4-8.4	0.0-0.5	14-37	8-22
ToB:					
Tuscola---------	0-10	5.6-7.3	1.0-2.0	4.0-13	0
	10-55	5.6-7.8	0.0-0.5	7.0-22	0-10
	55-80	7.4-8.4	0.0-0.5	2.0-22	5-25

Table 30.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	Cation-exchange capacity	Calcium carbonate
	In	pH	Pct	meq/100 g	Pct
TpA:					
Tuscola----------	0-8	5.6-7.3	1.0-3.0	5.0-18	0
	8-40	5.6-7.8	0.0-0.5	7.0-22	0-10
	40-80	7.4-8.4	0.0-0.5	2.0-22	5-25
TpB:					
Tuscola----------	0-11	5.6-7.3	1.0-3.0	5.0-18	0
	11-44	5.6-7.8	0.0-0.5	7.0-22	0-10
	44-80	7.4-8.4	0.0-0.5	2.0-22	5-25
TuB:					
Tuscola----------	0-9	5.6-7.3	1.0-3.0	5.0-18	0
	9-43	5.6-7.8	0.0-0.5	7.0-22	0-10
	43-80	7.4-8.4	0.0-0.5	2.0-22	5-25
UcA:					
Udorthents------	---	---	---	---	---
UcD:					
Udorthents------	---	---	---	---	---
Ur:					
Urban land------	---	---	---	---	---
VaA:					
Vanlue----------	0-10	5.6-7.3	1.0-3.0	6.0-21	0
	10-35	5.6-7.3	0.5-1.0	8.0-23	0
	35-59	6.6-8.4	0.0-0.5	4.0-22	0-30
	59-80	7.4-8.4	0.0-0.5	9.0-22	15-35
VeA:					
Vaughnsville----	0-8	6.1-7.3	1.0-3.0	9.0-22	0
	8-20	6.1-7.3	0.5-1.0	8.0-23	0
	20-36	6.1-7.8	0.0-0.5	2.0-19	0-10
	36-45	7.4-8.4	0.0-0.5	11-27	5-25
	45-80	7.4-8.4	0.0-0.5	11-27	15-30
WeA:					
Westland--------	0-10	6.1-7.3	2.0-5.0	10-26	0
	10-52	6.1-7.3	0.5-2.0	10-25	0
	52-59	6.6-7.8	0.5-2.0	3.0-22	0-25
	59-80	7.4-8.4	0.0-0.5	0.0-7.0	25-45
Rensselaer------	0-19	6.1-7.3	2.0-6.0	10-29	0
	19-38	6.1-7.3	0.5-2.0	9.0-25	0
	38-58	6.6-7.8	0.0-1.0	8.0-23	0-10
	58-80	7.4-8.4	0.0-0.5	1.0-13	5-25

Table 31.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
AdA:					
Adrian	---	>80	High	High	Moderate.
AkA:					
Alvada	---	>80	High	High	Low.
AmA:					
Alvada	---	>80	High	High	Low.
Urban land	---	---	---	---	---
AnA:					
Aquents	---	>80	High	High	Low.
ApB:					
Arkport	---	>80	Moderate	Low	Moderate.
ArA:					
Aurand	Dense material	40-60	High	High	Moderate.
AsA:					
Aurand	Dense material	40-60	High	High	Moderate.
Urban land	---	---	---	---	---
BgA:					
Biglick	Bedrock (lithic)	10-20	Moderate	High	Low.
Milton	Bedrock (lithic)	20-40	Moderate	High	Moderate.
BgB:					
Biglick	Bedrock (lithic)	10-20	Moderate	High	Low.
Milton	Bedrock (lithic)	20-40	Moderate	High	Moderate.
BnA:					
Blount	Dense material	30-60	High	High	Moderate.
BoA:					
Blount	Dense material	30-60	High	High	Moderate.
BoB:					
Blount	Dense material	30-60	High	High	Moderate.
BpA:					
Blount	Dense material	30-60	High	High	Moderate.
Houcktown	Dense material	40-60	High	Moderate	Moderate.
BrA:					
Blount	Dense material	30-60	High	High	Moderate.
Jenera	Dense material	40-60	High	Moderate	Moderate.
BuA:					
Blount	Dense material	30-60	High	High	Moderate.
Urban land	---	---	---	---	---

Table 31.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
ChC:					
Channahon----------	Bedrock (lithic)	10-20	Moderate----	Low---------	Low.
Biglick------------	Bedrock (lithic)	10-20	Moderate----	High--------	Low.
CoA:					
Colwood------------	---	>80	High--------	High--------	Low.
CtA:					
Cygnet-------------	Dense material	40-60	High--------	Moderate----	Moderate.
CuA:					
Cygnet-------------	Dense material	40-60	High--------	Moderate----	Moderate.
Urban land---------	---	---	---	---	---
DbA:					
Darroch------------	---	>80	High--------	High--------	Moderate.
DeA:					
Del Rey------------	---	>80	High--------	High--------	Moderate.
DfA:					
Del Rey------------	---	>80	High--------	High--------	Moderate.
Blount-------------	Dense material	30-60	High--------	High--------	Moderate.
DuB:					
Dunbridge----------	Bedrock (lithic)	20-40	Moderate----	Low---------	Low.
EmA:					
Elliott------------	Dense material	32-55	High--------	High--------	Moderate.
FbA:					
Flatrock-----------	---	>80	High--------	Moderate----	Low.
FcA:					
Flatrock-----------	---	>80	High--------	Moderate----	Low.
FdA:					
Flatrock-----------	Bedrock (lithic)	60-80	High--------	Moderate----	Low.
FoA:					
Fox----------------	---	>80	Moderate----	Low---------	Moderate.
FoB:					
Fox----------------	---	>80	Moderate----	Low---------	Moderate.
FoC2:					
Fox----------------	---	>80	Moderate----	Low---------	Moderate.
FsA:					
Fulton-------------	---	>80	High--------	High--------	Moderate.
FtA:					
Fulton-------------	Dense material	60-80	High--------	High--------	Moderate.
GaB:					
Gallman------------	---	>80	Moderate----	Low---------	Moderate.
GfA:					
Gilford------------	---	>80	High--------	High--------	Moderate.

Table 31.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
GmA:					
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
	Bedrock (lithic)	60-80			
GnB:					
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
GpB2:					
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
GpC2:					
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
GsB:					
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
Blount-------------	Dense material	30-60	High--------	High--------	Moderate.
Houcktown----------	Dense material	40-60	High--------	Moderate----	Moderate.
GuB:					
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
Urban land---------	---	---	---	---	---
HaA:					
Harrod-------------	Bedrock (lithic)	20-40	High--------	High--------	Low.
HkA:					
Haskins------------	Dense material	40-60	High--------	High--------	Moderate.
HnA:					
Haskins------------	Dense material	40-60	High--------	High--------	Moderate.
HpA:					
Houcktown----------	Dense material	40-60	High--------	Moderate----	Moderate.
HpB:					
Houcktown----------	Dense material	40-60	High--------	Moderate----	Moderate.
HrB:					
Houcktown----------	Dense material	40-60	High--------	Moderate----	Moderate.
Glynwood-----------	Dense material	25-50	High--------	High--------	Moderate.
Jenera-------------	Dense material	40-60	High--------	Moderate----	Moderate.
HsA:					
Hoytville----------	Dense material	40-65	High--------	High--------	Low.
HtA:					
Hoytville----------	Dense material	40-65	High--------	High--------	Low.
JeA:					
Jenera-------------	---	>80	High--------	Moderate----	Moderate.
JeB:					
Jenera-------------	---	>80	High--------	Moderate----	Moderate.
JfB:					
Jenera-------------	Dense material	40-60	High--------	Moderate----	Moderate.
Shinrock-----------	Dense material	60-80	High--------	High--------	Moderate.

Table 31.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
JoA:					
Joliet-------------	Bedrock (lithic)	10-20	High--------	High--------	Low.
KnA:					
Knoxdale-----------	---	>80	Moderate----	Low---------	Low.
LbA:					
Lamberjack---------	Dense material	60-80	High--------	High--------	Moderate.
LcA:					
Lamberjack---------	Dense material	60-80	High--------	High--------	Moderate.
Urban land---------	---	---	---	---	---
LuB2:					
Lucas--------------	---	>80	Moderate----	High--------	Moderate.
LyE:					
Lybrand------------	Dense material	40-60	Moderate----	High--------	Moderate.
MbA:					
Medway-------------	---	>80	High--------	High--------	Low.
McA:					
Medway-------------	Bedrock (lithic)	60-80	High--------	High--------	Low.
MeA:					
Mermill------------	---	>80	High--------	High--------	Moderate.
MfA:					
Mermill------------	---	>80	High--------	High--------	Moderate.
MgA:					
Millsdale----------	Bedrock (lithic)	20-40	High--------	High--------	Low.
MnA:					
Milton-------------	Bedrock (lithic)	20-40	Moderate----	High--------	Moderate.
MpD3:					
Morley-------------	Dense material	20-40	Moderate----	High--------	Moderate.
MrA:					
Morley-------------	Dense material	40-60	Moderate----	High--------	Moderate.
	Bedrock (lithic)	60-80			
MsB:					
Morley-------------	Dense material	40-60	Moderate----	High--------	Moderate.
	Bedrock (lithic)	60-80			
Milton-------------	Bedrock (lithic)	20-40	Moderate----	High--------	Moderate.
MvB:					
Mortimer-----------	Dense material	40-60	High--------	High--------	Moderate.
MwB2:					
Mortimer-----------	Dense material	40-60	High--------	High--------	Moderate.
NnA:					
Nappanee-----------	Dense material	40-60	High--------	High--------	Moderate.
NnB:					
Nappanee-----------	Dense material	40-60	High--------	High--------	Moderate.

Table 31.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
NpA:					
Nappanee	Dense material	40-60	High	High	Moderate.
NpB2:					
Nappanee	Dense material	40-60	High	High	Moderate.
NrA:					
Nappanee	Dense material	40-60	High	High	Moderate.
Urban land	---	---	---	---	---
OrA:					
Oshtemo	---	>80	Moderate	Low	Moderate.
OrB:					
Oshtemo	---	>80	Moderate	Low	Moderate.
OrC:					
Oshtemo	---	>80	Moderate	Low	Moderate.
OsB:					
Oshtemo	Dense material	60-80	Moderate	Low	Moderate.
OwB:					
Ottokee	---	>80	Moderate	Low	Moderate.
PbA:					
Patton	---	>80	High	High	Low.
PmA:					
Pewamo	---	>80	High	High	Moderate.
PnA:					
Pewamo	---	>80	High	High	Moderate.
Urban land	---	---	---	---	---
Pt:					
Pits	---	---	---	---	---
RcA:					
Randolph	Bedrock (lithic)	20-40	High	High	Moderate.
RgB:					
Rawson	Dense material	24-48	Moderate	Moderate	Moderate.
RhA:					
Rensselaer	---	>80	High	High	Low.
RnA:					
Rimer	Dense material	40-60	High	High	Moderate.
RoA:					
Rimer	---	>80	High	High	Moderate.
RtA:					
Rossburg	---	>80	Moderate	Low	Low.
SeA:					
Shawtown	Dense material	50-70	Moderate	Low	Moderate.

Table 31.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
SeB:					
Shawtown	Dense material	50-70	Moderate	Low	Moderate.
SfB:					
Shinrock	---	>80	High	High	Moderate.
SgC2:					
Shinrock	---	>80	High	High	Moderate.
SkB:					
Shinrock	Dense material	60-80	High	High	Moderate.
Glynwood	Dense material	25-50	High	High	Moderate.
SmA:					
Shoals	---	>80	High	High	Low.
SnA:					
Sloan	---	>80	High	High	Low.
SoA:					
Sloan	---	>80	High	High	Low.
SpA:					
Sloan	Bedrock (lithic)	60-80	High	High	Low.
StB2:					
St. Clair	Dense material	20-55	Moderate	High	Moderate.
StC2:					
St. Clair	Dense material	20-55	Moderate	High	Moderate.
ThA:					
Thackery	Dense material	60-80	High	Moderate	Moderate.
TkA:					
Tiderishi	---	>80	High	High	Moderate.
TnA:					
Toledo	---	>80	High	High	Low.
ToB:					
Tuscola	---	>80	High	Moderate	Moderate.
TpA:					
Tuscola	---	>80	High	Moderate	Moderate.
TpB:					
Tuscola	---	>80	High	Moderate	Moderate.
TuB:					
Tuscola	---	>80	High	Moderate	Moderate.
UcA:					
Udorthents	---	---	---	---	---
UcD:					
Udorthents	---	---	---	---	---
Ur:					
Urban land	---	---	---	---	---

Table 31.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
VaA:					
Vanlue	---	>80	High	High	Moderate.
VeA:					
Vaughnsville	Dense material	40-60	Moderate	Moderate	Low.
WeA:					
Westland	---	>80	High	High	Low.
Rensselaer	---	>80	High	High	Low.

Table 32.--Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
AdA:										
Adrian----------	A	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
		November	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Long	Frequent	---	---
AkA:										
Alvada----------	B	January	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		November	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
AmA:										
Alvada----------	B	January	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		November	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
AnA:										
Aquents---------	---	January	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---
		February	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---
		March	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---
		April	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---
		May	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---
		November	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---
		December	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Long	Frequent	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
ApB:										
Arkport---------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---
ArA:										
Aurand----------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		May	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
AsA:										
Aurand----------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		May	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
BgA:										
Biglick---------	D	January	>1.7	>1.7	---	---	---	---	---	---
		February	>1.7	>1.7	---	---	---	---	---	---
		March	>1.7	>1.7	---	---	---	---	---	---
		April	>1.7	>1.7	---	---	---	---	---	---
		May	>1.7	>1.7	---	---	---	---	---	---
		June	>1.7	>1.7	---	---	---	---	---	---
		July	>1.7	>1.7	---	---	---	---	---	---
		August	>1.7	>1.7	---	---	---	---	---	---
		September	>1.7	>1.7	---	---	---	---	---	---
		October	>1.7	>1.7	---	---	---	---	---	---
		November	>1.7	>1.7	---	---	---	---	---	---
		December	>1.7	>1.7	---	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
BgA:										
Milton----------	C	January	>3.3	>3.3	---	---	---	---	---	---
		February	>3.3	>3.3	---	---	---	---	---	---
		March	>3.3	>3.3	---	---	---	---	---	---
		April	>3.3	>3.3	---	---	---	---	---	---
		May	>3.3	>3.3	---	---	---	---	---	---
		June	>3.3	>3.3	---	---	---	---	---	---
		July	>3.3	>3.3	---	---	---	---	---	---
		August	>3.3	>3.3	---	---	---	---	---	---
		September	>3.3	>3.3	---	---	---	---	---	---
		October	>3.3	>3.3	---	---	---	---	---	---
		November	>3.3	>3.3	---	---	---	---	---	---
		December	>3.3	>3.3	---	---	---	---	---	---
BgB:										
Biglick---------	D	January	>1.7	>1.7	---	---	---	---	---	---
		February	>1.7	>1.7	---	---	---	---	---	---
		March	>1.7	>1.7	---	---	---	---	---	---
		April	>1.7	>1.7	---	---	---	---	---	---
		May	>1.7	>1.7	---	---	---	---	---	---
		June	>1.7	>1.7	---	---	---	---	---	---
		July	>1.7	>1.7	---	---	---	---	---	---
		August	>1.7	>1.7	---	---	---	---	---	---
		September	>1.7	>1.7	---	---	---	---	---	---
		October	>1.7	>1.7	---	---	---	---	---	---
		November	>1.7	>1.7	---	---	---	---	---	---
		December	>1.7	>1.7	---	---	---	---	---	---
Milton----------	C	January	>3.3	>3.3	---	---	---	---	---	---
		February	>3.3	>3.3	---	---	---	---	---	---
		March	>3.3	>3.3	---	---	---	---	---	---
		April	>3.3	>3.3	---	---	---	---	---	---
		May	>3.3	>3.3	---	---	---	---	---	---
		June	>3.3	>3.3	---	---	---	---	---	---
		July	>3.3	>3.3	---	---	---	---	---	---
		August	>3.3	>3.3	---	---	---	---	---	---
		September	>3.3	>3.3	---	---	---	---	---	---
		October	>3.3	>3.3	---	---	---	---	---	---
		November	>3.3	>3.3	---	---	---	---	---	---
		December	>3.3	>3.3	---	---	---	---	---	---
BnA:										
Blount----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
BoA:										
Blount----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
BoB:										
Blount----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
BpA:										
Blount----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
Houcktown-------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		November	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
BrA:										
Blount----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
Jenera----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
BuA:										
Blount----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
ChC:										
Channahon-------	D	January	>1.7	>1.7	---	---	---	---	---	---
		February	>1.7	>1.7	---	---	---	---	---	---
		March	>1.7	>1.7	---	---	---	---	---	---
		April	>1.7	>1.7	---	---	---	---	---	---
		May	>1.7	>1.7	---	---	---	---	---	---
		June	>1.7	>1.7	---	---	---	---	---	---
		July	>1.7	>1.7	---	---	---	---	---	---
		August	>1.7	>1.7	---	---	---	---	---	---
		September	>1.7	>1.7	---	---	---	---	---	---
		October	>1.7	>1.7	---	---	---	---	---	---
		November	>1.7	>1.7	---	---	---	---	---	---
		December	>1.7	>1.7	---	---	---	---	---	---
Biglick---------	D	January	>1.7	>1.7	---	---	---	---	---	---
		February	>1.7	>1.7	---	---	---	---	---	---
		March	>1.7	>1.7	---	---	---	---	---	---
		April	>1.7	>1.7	---	---	---	---	---	---
		May	>1.7	>1.7	---	---	---	---	---	---
		June	>1.7	>1.7	---	---	---	---	---	---
		July	>1.7	>1.7	---	---	---	---	---	---
		August	>1.7	>1.7	---	---	---	---	---	---
		September	>1.7	>1.7	---	---	---	---	---	---
		October	>1.7	>1.7	---	---	---	---	---	---
		November	>1.7	>1.7	---	---	---	---	---	---
		December	>1.7	>1.7	---	---	---	---	---	---
CoA:										
Colwood---------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
		November	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Very brief	Occasional	---	---
CtA:										
Cygnet----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
CuA:										
Cygnet----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
DbA:										
Darroch----------	B	January	1.0-2.0	>6.0	Apparent	---	---	---	---	---
		February	1.0-2.0	>6.0	Apparent	---	---	---	---	---
		March	1.0-2.0	>6.0	Apparent	---	---	---	---	---
		April	1.0-2.0	>6.0	Apparent	---	---	---	---	---
		December	1.0-2.0	>6.0	Apparent	---	---	---	---	---
DeA:										
Del Rey----------	C	January	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		May	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
DfA:										
Del Rey----------	C	January	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
		May	0.5-2.0	3.3-5.0	Perched	---	---	---	---	---
Blount-----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
DuB:										
Dunbridge--------	B	January	>3.3	>3.3	---	---	---	---	---	---
		February	>3.3	>3.3	---	---	---	---	---	---
		March	>3.3	>3.3	---	---	---	---	---	---
		April	>3.3	>3.3	---	---	---	---	---	---
		May	>3.3	>3.3	---	---	---	---	---	---
		June	>3.3	>3.3	---	---	---	---	---	---
		July	>3.3	>3.3	---	---	---	---	---	---
		August	>3.3	>3.3	---	---	---	---	---	---
		September	>3.3	>3.3	---	---	---	---	---	---
		October	>3.3	>3.3	---	---	---	---	---	---
		November	>3.3	>3.3	---	---	---	---	---	---
		December	>3.3	>3.3	---	---	---	---	---	---
EmA:										
Elliott----------	C	January	1.0-2.0	2.7-4.5	Perched	---	---	---	---	---
		February	1.0-2.0	2.7-4.5	Perched	---	---	---	---	---
		March	1.0-2.0	2.7-4.5	Perched	---	---	---	---	---
		April	1.0-2.0	2.7-4.5	Perched	---	---	---	---	---
		May	1.0-2.0	2.7-4.5	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
FbA:										
Flatrock--------	B	January	1.0-2.0	>6.0	Apparent	---	---	---	Very brief	Occasional
		February	1.0-2.0	>6.0	Apparent	---	---	---	Very brief	Occasional
		March	1.0-2.0	>6.0	Apparent	---	---	---	Very brief	Occasional
		April	1.0-2.0	>6.0	Apparent	---	---	---	Very brief	Occasional
		December	1.0-2.0	>6.0	Apparent	---	---	---	Very brief	Occasional
FcA:										
Flatrock--------	B	January	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		February	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		March	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		April	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		December	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
FdA:										
Flatrock--------	B	January	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		February	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		March	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		April	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		December	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
FoA:										
Fox-------------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---
FoB:										
Fox-------------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
FoC2:										
Fox-------------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---
FsA:										
Fulton----------	D	January	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
FtA:										
Fulton----------	D	January	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	3.3-5.0	Perched	---	---	---	---	---
GaB:										
Gallman---------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
GfA:										
Gilford----------	B	January	0.0-1.0	>6.0	Apparent	0.0-0.5	Very brief	Occasional	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-0.5	Very brief	Occasional	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-0.5	Very brief	Occasional	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-0.5	Very brief	Occasional	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-0.5	Very brief	Occasional	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-0.5	Very brief	Occasional	---	---
GmA:										
Glynwood---------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
GnB:										
Glynwood---------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
GpB2:										
Glynwood---------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
GpC2:										
Glynwood---------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
GsB:										
Glynwood---------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
Blount-----------	C	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
GsB:										
Houcktown-------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		November	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
GuB:										
Glynwood--------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
HaA:										
Harrod----------	B	January	1.0-2.0	>3.3	Apparent	---	---	---	Brief	Frequent
		February	1.0-2.0	>3.3	Apparent	---	---	---	Brief	Frequent
		March	1.0-2.0	>3.3	Apparent	---	---	---	Brief	Frequent
		April	1.0-2.0	>3.3	Apparent	---	---	---	Brief	Frequent
		May	---	---	---	---	---	---	Brief	Frequent
		June	---	---	---	---	---	---	Brief	Frequent
		November	---	---	---	---	---	---	Brief	Frequent
		December	1.0-2.0	>3.3	Apparent	---	---	---	Brief	Frequent
HkA:										
Haskins---------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		November	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
HnA:										
Haskins---------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		November	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
HpA:										
Houcktown-------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		November	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
HpB:										
Houcktown-------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		November	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
HrB:										
Houcktown-------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		November	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
Glynwood--------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
Jenera----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
HsA:										
Hoytville-------	C	January	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
		February	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
		March	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
		April	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
HtA:										
Hoytville-------	C	January	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
		February	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
		March	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
		April	0.0-1.0	3.3-5.0	Perched	0.0-1.0	Brief	Frequent	---	---
JeA:										
Jenera----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
JeB:										
Jenera----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
JfB:										
Jenera----------	B	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
Shinrock--------	C	January	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		February	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		March	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		April	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		May	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		December	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
JoA:										
Joliet----------	D	January	0.0-1.0	>1.7	Apparent	---	---	---	---	---
		February	0.0-1.0	>1.7	Apparent	---	---	---	---	---
		March	0.0-1.0	>1.7	Apparent	---	---	---	---	---
		April	0.0-1.0	>1.7	Apparent	---	---	---	---	---
		May	0.0-1.0	>1.7	Apparent	---	---	---	---	---
		December	0.0-1.0	>1.7	Apparent	---	---	---	---	---
KnA:										
Knoxdale--------	B	January	3.5-6.0	>6.0	Apparent	---	---	---	Brief	Occasional
		February	3.5-6.0	>6.0	Apparent	---	---	---	Brief	Occasional
		March	3.5-6.0	>6.0	Apparent	---	---	---	Brief	Occasional
		April	3.5-6.0	>6.0	Apparent	---	---	---	Brief	Occasional
		December	3.5-6.0	>6.0	Apparent	---	---	---	Brief	Occasional
LbA:										
Lamberjack------	B	January	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		February	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		March	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		April	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		November	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		December	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
LcA:										
Lamberjack------	B	January	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		February	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		March	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		April	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		November	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
		December	0.5-1.5	5.0-6.6	Perched	---	---	---	---	---
LuB2:										
Lucas-----------	D	January	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
		February	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
		March	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
		April	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
LyE:										
Lybrand---------	C	February	3.3-5.0	3.5-5.0	Perched	---	---	---	---	---
		March	3.3-5.0	3.5-5.0	Perched	---	---	---	---	---
		April	3.3-5.0	3.5-5.0	Perched	---	---	---	---	---
MbA:										
Medway----------	B	January	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		February	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		March	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		April	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		May	---	---	---	---	---	---	Brief	Occasional
		June	---	---	---	---	---	---	Brief	Occasional
		November	---	---	---	---	---	---	Brief	Occasional
		December	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
McA:										
Medway----------	B	January	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		February	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		March	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		April	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
		May	---	---	---	---	---	---	Brief	Occasional
		June	---	---	---	---	---	---	Brief	Occasional
		November	---	---	---	---	---	---	Brief	Occasional
		December	1.0-2.0	>6.0	Apparent	---	---	---	Brief	Occasional
MeA:										
Mermill---------	B	January	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
MfA:										
Mermill---------	B	January	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	3.0-5.0	Perched	0.0-1.0	Brief	Occasional	---	---
MgA:										
Millsdale-------	C	January	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
		November	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	>3.3	Apparent	0.0-1.0	Brief	Occasional	---	---
MnA:										
Milton----------	C	January	>3.3	>3.3	---	---	---	---	---	---
		February	>3.3	>3.3	---	---	---	---	---	---
		March	>3.3	>3.3	---	---	---	---	---	---
		April	>3.3	>3.3	---	---	---	---	---	---
		May	>3.3	>3.3	---	---	---	---	---	---
		June	>3.3	>3.3	---	---	---	---	---	---
		July	>3.3	>3.3	---	---	---	---	---	---
		August	>3.3	>3.3	---	---	---	---	---	---
		September	>3.3	>3.3	---	---	---	---	---	---
		October	>3.3	>3.3	---	---	---	---	---	---
		November	>3.3	>3.3	---	---	---	---	---	---
		December	>3.3	>3.3	---	---	---	---	---	---
MpD3:										
Morley----------	C	January	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		February	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		March	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		April	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
MrA:										
Morley----------	C	January	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		February	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		March	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		April	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
MsB:										
Morley----------	C	January	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		February	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		March	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
		April	2.0-3.5	2.5-3.5	Perched	---	---	---	---	---
Milton----------	C	January	>3.3	>3.3	---	---	---	---	---	---
		February	>3.3	>3.3	---	---	---	---	---	---
		March	>3.3	>3.3	---	---	---	---	---	---
		April	>3.3	>3.3	---	---	---	---	---	---
		May	>3.3	>3.3	---	---	---	---	---	---
		June	>3.3	>3.3	---	---	---	---	---	---
		July	>3.3	>3.3	---	---	---	---	---	---
		August	>3.3	>3.3	---	---	---	---	---	---
		September	>3.3	>3.3	---	---	---	---	---	---
		October	>3.3	>3.3	---	---	---	---	---	---
		November	>3.3	>3.3	---	---	---	---	---	---
		December	>3.3	>3.3	---	---	---	---	---	---
MvB:										
Mortimer--------	D	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
MwB2:										
Mortimer--------	D	January	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		February	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		March	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		April	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
		December	1.0-2.0	3.3-5.0	Perched	---	---	---	---	---
NnA:										
Nappanee--------	D	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
NnB:										
Nappanee--------	D	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
NpA:										
Nappanee--------	D	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
NpB2:										
Nappanee--------	D	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
NrA:										
Nappanee--------	D	January	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		February	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		March	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		April	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		May	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		November	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---
		December	0.5-1.0	2.5-5.0	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
OrA:										
Oshtemo---------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---
OrB:										
Oshtemo---------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---
OrC:										
Oshtemo---------	B	January	>6.0	>6.0	---	---	---	---	---	---
		February	>6.0	>6.0	---	---	---	---	---	---
		March	>6.0	>6.0	---	---	---	---	---	---
		April	>6.0	>6.0	---	---	---	---	---	---
		May	>6.0	>6.0	---	---	---	---	---	---
		June	>6.0	>6.0	---	---	---	---	---	---
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	---	---
		December	>6.0	>6.0	---	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
OsB:										
Oshtemo----------	B	January	3.5-6.0	5.0-6.6	Perched	---	---	---	---	---
		February	3.5-6.0	5.0-6.6	Perched	---	---	---	---	---
		March	3.5-6.0	5.0-6.6	Perched	---	---	---	---	---
		April	3.5-6.0	5.0-6.6	Perched	---	---	---	---	---
		May	3.5-6.0	5.0-6.6	Perched	---	---	---	---	---
		December	3.5-6.0	5.0-6.6	Perched	---	---	---	---	---
OwB:										
Ottokee----------	A	January	2.0-3.5	>6.0	Apparent	---	---	---	---	---
		February	2.0-3.5	>6.0	Apparent	---	---	---	---	---
		March	2.0-3.5	>6.0	Apparent	---	---	---	---	---
		April	2.0-3.5	>6.0	Apparent	---	---	---	---	---
PbA:										
Patton----------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
PmA:										
Pewamo----------	C	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		November	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
PnA:										
Pewamo----------	C	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
RcA:										
Randolph--------	C	January	0.5-1.0	>3.3	Apparent	---	---	---	---	---
		February	0.5-1.0	>3.3	Apparent	---	---	---	---	---
		March	0.5-1.0	>3.3	Apparent	---	---	---	---	---
		April	0.5-1.0	>3.3	Apparent	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
RgB:										
Rawson----------	B	January	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
		February	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
		March	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
		April	2.0-3.5	2.5-4.0	Perched	---	---	---	---	---
RhA:										
Rensselaer------	B	January	0.0-1.0	5.0-6.6	Perched	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	5.0-6.6	Perched	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	5.0-6.6	Perched	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	5.0-6.6	Perched	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	5.0-6.6	Perched	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	5.0-6.6	Perched	0.0-1.0	Brief	Occasional	---	---
RnA:										
Rimer-----------	C	January	0.5-1.5	3.0-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.0-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.0-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.0-5.0	Perched	---	---	---	---	---
RoA:										
Rimer-----------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
RtA:										
Rossburg--------	B	January	>6.0	>6.0	---	---	---	---	Brief	Occasional
		February	>6.0	>6.0	---	---	---	---	Brief	Occasional
		March	>6.0	>6.0	---	---	---	---	Brief	Occasional
		April	>6.0	>6.0	---	---	---	---	Brief	Occasional
		May	>6.0	>6.0	---	---	---	---	Brief	Occasional
		June	>6.0	>6.0	---	---	---	---	Brief	Occasional
		July	>6.0	>6.0	---	---	---	---	---	---
		August	>6.0	>6.0	---	---	---	---	---	---
		September	>6.0	>6.0	---	---	---	---	---	---
		October	>6.0	>6.0	---	---	---	---	---	---
		November	>6.0	>6.0	---	---	---	---	Brief	Occasional
		December	>6.0	>6.0	---	---	---	---	Brief	Occasional
SeA:										
Shawtown--------	B	January	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		February	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		March	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		April	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		December	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
SeB:										
Shawtown--------	B	January	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		February	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		March	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		April	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
		December	2.0-3.5	4.2-5.8	Perched	---	---	---	---	---
SfB:										
Shinrock--------	C	January	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		February	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		March	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		April	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		May	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		December	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
SgC2:										
Shinrock--------	C	January	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		February	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		March	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		April	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		May	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		December	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
SkB:										
Shinrock--------	C	January	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		February	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		March	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		April	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		May	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
		December	1.0-2.0	2.5-4.5	Perched	---	---	---	---	---
Glynwood--------	C	January	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		February	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		March	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
		April	1.0-2.0	2.1-4.2	Perched	---	---	---	---	---
SmA:										
Shoals----------	C	January	0.5-1.5	>6.0	Apparent	---	---	---	Brief	Occasional
		February	0.5-1.5	>6.0	Apparent	---	---	---	Brief	Occasional
		March	0.5-1.5	>6.0	Apparent	---	---	---	Brief	Occasional
		April	0.5-1.5	>6.0	Apparent	---	---	---	Brief	Occasional
		May	---	---	---	---	---	---	Brief	Occasional
		June	---	---	---	---	---	---	Brief	Occasional
		November	---	---	---	---	---	---	Brief	Occasional
		December	---	---	---	---	---	---	Brief	Occasional

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
SnA:										
Sloan-----------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		June	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		November	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
SoA:										
Sloan-----------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		June	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		November	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
SpA:										
Sloan-----------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		June	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		November	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	Brief	Occasional
StB2:										
St. Clair-------	D	January	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
		February	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
		March	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
		April	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
StC2:										
St. Clair-------	D	January	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
		February	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
		March	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---
		April	2.0-3.0	2.1-4.6	Perched	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Water table: Kind	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
ThA:										
Thackery--------	B	January	1.0-2.5	5.0-6.6	Perched	---	---	---	---	---
		February	1.0-2.5	5.0-6.6	Perched	---	---	---	---	---
		March	1.0-2.5	5.0-6.6	Perched	---	---	---	---	---
		April	1.0-2.5	5.0-6.6	Perched	---	---	---	---	---
		May	1.0-2.5	5.0-6.6	Perched	---	---	---	---	---
		December	1.0-2.5	5.0-6.6	Perched	---	---	---	---	---
TkA:										
Tiderishi-------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		November	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
TnA:										
Toledo----------	D	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Frequent	---	---
		May	0.0-1.0	>6.0	Apparent	---	---	---	---	---
		November	0.0-1.0	>6.0	Apparent	---	---	---	---	---
		December	0.0-1.0	>6.0	Apparent	---	---	---	---	---
ToB:										
Tuscola---------	B	January	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		February	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		March	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		April	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		November	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		December	1.5-2.5	>6.0	Apparent	---	---	---	---	---
TpA:										
Tuscola---------	B	January	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		February	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		March	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		April	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		November	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		December	1.5-2.5	>6.0	Apparent	---	---	---	---	---
TpB:										
Tuscola---------	B	January	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		February	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		March	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		April	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		November	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		December	1.5-2.5	>6.0	Apparent	---	---	---	---	---

Table 32.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table			Ponding			Flooding	
			Upper limit	Lower limit	Kind	Surface water depth	Duration	Frequency	Duration	Frequency
TuB:										
Tuscola---------	B	January	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		February	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		March	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		April	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		November	1.5-2.5	>6.0	Apparent	---	---	---	---	---
		December	1.5-2.5	>6.0	Apparent	---	---	---	---	---
VaA:										
Vanlue----------	C	January	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		February	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		March	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		April	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
		December	0.5-1.5	3.3-5.0	Perched	---	---	---	---	---
VeA:										
Vaughnsville----	B	January	2.0-3.5	3.3-5.0	Perched	---	---	---	---	---
		February	2.0-3.5	3.3-5.0	Perched	---	---	---	---	---
		March	2.0-3.5	3.3-5.0	Perched	---	---	---	---	---
		April	2.0-3.5	3.3-5.0	Perched	---	---	---	---	---
WeA:										
Westland--------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
Rensselaer------	B	January	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		February	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		March	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		April	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		May	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---
		December	0.0-1.0	>6.0	Apparent	0.0-1.0	Brief	Occasional	---	---

Table 33.--Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Adrian	Sandy or sandy-skeletal, mixed, euic, mesic Terric Medisaprists
Alvada	Fine-loamy, mixed, mesic Typic Argiaquolls
Aquents	Mixed, mesic Aquents
Arkport	Coarse-loamy, mixed, active, mesic Lamellic Hapludalfs
Aurand	Fine-loamy, mixed, mesic Aquic Argiudolls
Biglick	Clayey, illitic, mesic Lithic Hapludalfs
Blount	Fine, illitic, mesic Aeric Epiaqualfs
Channahon	Loamy, mixed, mesic Lithic Argiudolls
Colwood	Fine-loamy, mixed, mesic Typic Endoaquolls
Cygnet	Fine-loamy, mixed, mesic Aquic Hapludalfs
Darroch	Fine-loamy, mixed, mesic Aquic Argiudolls
Del Rey	Fine, illitic, mesic Aeric Epiaqualfs
Dunbridge	Fine-loamy, mixed, mesic Mollic Hapludalfs
Elliott	Fine, illitic, mesic Aquic Argiudolls
Flatrock	Fine-loamy, mixed, mesic Fluvaquentic Eutrochrepts
Fox	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Hapludalfs
Fulton	Fine, illitic, mesic Aeric Epiaqualfs
Gallman	Fine-loamy, mixed, mesic Typic Hapludalfs
Gilford	Coarse-loamy, mixed, mesic Typic Endoaquolls
Glynwood	Fine, illitic, mesic Aquic Hapludalfs
Harrod	Fine-loamy, mixed, mesic Fluvaquentic Hapludolls
Haskins	Fine-loamy, mixed, mesic Aeric Epiaqualfs
Houcktown	Fine-loamy, mixed, mesic Aquic Hapludalfs
Hoytville	Fine, illitic, mesic Mollic Epiaqualfs
Jenera	Fine-loamy, mixed, mesic Aquic Hapludalfs
*Joliet	Loamy, mixed, mesic Lithic Endoaquolls
Knoxdale	Fine-loamy, mixed, mesic Dystric Fluventic Eutrochrepts
Lamberjack	Fine-loamy, mixed, mesic Aeric Epiaqualfs
Lucas	Fine, illitic, mesic Oxyaquic Hapludalfs
Lybrand	Fine, illitic, mesic Typic Hapludalfs
Medway	Fine-loamy, mixed, mesic Fluvaquentic Hapludolls
Mermill	Fine-loamy, mixed, mesic Mollic Epiaqualfs
Millsdale	Fine, mixed, mesic Typic Argiaquolls
Milton	Fine, mixed, mesic Typic Hapludalfs
Morley	Fine, illitic, mesic Oxyaquic Hapludalfs
Mortimer	Fine, illitic, mesic Aquic Hapludalfs
Nappanee	Fine, illitic, mesic Aeric Epiaqualfs
Oshtemo	Coarse-loamy, mixed, mesic Typic Hapludalfs
Ottokee	Mixed, mesic Aquic Udipsamments
Patton	Fine-silty, mixed, mesic Typic Endoaquolls
Pewamo	Fine, mixed, mesic Typic Argiaquolls
Randolph	Fine, mixed, mesic Aeric Endoaqualfs
Rawson	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Rensselaer	Fine-loamy, mixed, mesic Typic Argiaquolls
Rimer	Loamy, mixed, mesic Aquic Arenic Hapludalfs
Rossburg	Fine-loamy, mixed, mesic Fluventic Hapludolls
Shawtown	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Shinrock	Fine, illitic, mesic Aquic Hapludalfs
Shoals	Fine-loamy, mixed, nonacid, mesic Aeric Fluvaquents
Sloan	Fine-loamy, mixed, mesic Fluvaquentic Endoaquolls
St. Clair	Fine, illitic, mesic Oxyaquic Hapludalfs
Thackery	Fine-loamy, mixed, mesic Aquic Hapludalfs
Tiderishi	Fine-loamy, mixed, mesic Aquic Argiudolls
Toledo	Fine, illitic, nonacid, mesic Mollic Endoaquepts
Tuscola	Fine-loamy, mixed, mesic Aquic Hapludalfs
Udorthents	Mixed, mesic Udorthents
Vanlue	Fine-loamy, mixed, mesic Aquic Hapludalfs
Vaughnsville	Fine-loamy, mixed, mesic Oxyaquic Hapludalfs
Westland	Fine-loamy, mixed, mesic Typic Argiaquolls

Interpretive Groups

Interpretive Groups

(Dashes indicate that the soil is not assigned to an interpretive group.)

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
AdA---------------------- Adrian	4w	No	Yes	D-1
AkA---------------------- Alvada	2w	Yes*	Yes	C-1
AmA----------------------	---	No		
Alvada------------------			Yes	---
Urban land.				
AnA---------------------- Aquents	---	No	Yes	---
ApB---------------------- Arkport	2e	Yes	No	B-1
ArA---------------------- Aurand	2w	Yes*	No	C-1
AsA----------------------	---	No		
Aurand------------------			No	---
Urban land.				
BgA----------------------	3s	No		
Biglick-----------------			No	E-1
Milton------------------			No	F-1
BgB----------------------	3e	No		
Biglick-----------------			No	E-1
Milton------------------			No	F-1
BnA---------------------- Blount	2w	Yes*	No	C-1
BoA---------------------- Blount	2w	Yes*	No	C-1
BoB---------------------- Blount	2e	Yes*	No	C-1
BpA----------------------	2w	Yes*		
Blount------------------			No	C-1
Houcktown---------------			No	A-6
BrA----------------------	2w	Yes*		
Blount------------------			No	C-1
Jenera------------------			No	A-6
BuA----------------------	---	No		
Blount------------------			No	---
Urban land.				

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
ChC	4e	No		
Channahon			No	E-1
Biglick			No	E-1
CoA	2w	Yes*	Yes	C-1
Colwood				
CtA	1	Yes	No	A-6
Cygnet				
CuA	---	No		
Cygnet			No	---
Urban land.				
DbA	2w	Yes*	No	C-1
Darroch				
DeA	2w	Yes*	No	C-1
Del Rey				
DfA	2w	Yes*		
Del Rey			No	C-1
Blount			No	C-1
DuB	3s	Yes	No	F-1
Dunbridge				
EmA	2w	Yes*	No	C-1
Elliott				
FbA	2w	Yes	No	A-5
Flatrock				
FcA	2w	Yes	No	A-5
Flatrock				
FdA	2w	Yes	No	A-5
Flatrock				
FoA	2s	Yes	No	A-1
Fox				
FoB	2e	Yes	No	A-1
Fox				
FoC2	3e	No	No	A-1
Fox				
FsA	3w	Yes*	No	C-2
Fulton				
FtA	3w	Yes*	No	C-2
Fulton				
GaB	2e	Yes	No	A-1
Gallman				

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
GfA: Gilford	3w	Yes*	Yes	C-1
GmA: Glynwood	1	Yes	No	A-6
GnB: Glynwood	2e	Yes	No	A-6
GpB2: Glynwood	3e	Yes	No	A-6
GpC2: Glynwood	4e	No	No	A-6
GsB:	2e	Yes		
Glynwood			No	A-6
Blount			No	C-1
Houcktown			No	A-6
GuB:	---	No		
Glynwood			No	---
Urban land.				
HaA: Harrod	3w	Yes**	No	F-1
HkA: Haskins	2w	Yes*	No	C-1
HnA: Haskins	2w	Yes*	No	C-1
HpA: Houcktown	1	Yes	No	A-6
HpB: Houcktown	2e	Yes	No	A-6
HrB:	2e	Yes		
Houcktown			No	A-6
Glynwood			No	A-6
Jenera			No	A-6
HsA: Hoytville	2w	Yes*	Yes	C-1
HtA: Hoytville	2w	Yes*	Yes	C-1
JeA: Jenera	1	Yes	No	A-6
JeB: Jenera	2e	Yes	No	A-6

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
JfB	2e	Yes		
Jenera			No	A-6
Shinrock			No	A-6
JoA	4w	No	Yes	E-1
Joliet				
KnA	2w	Yes	No	A-5
Knoxdale				
LbA	2w	Yes*	No	C-1
Lamberjack				
LcA	---	No		
Lamberjack			No	---
Urban land.				
LuB2	3e	Yes	No	A-1
Lucas				
LyE	6e	No	No	A-3
Lybrand				
MbA	2w	Yes	No	A-5
Medway				
McA	2w	Yes	No	A-5
Medway				
MeA	2w	Yes*	Yes	C-1
Mermill				
MfA	2w	Yes*	Yes	C-1
Mermill				
MgA	3w	Yes*	Yes	C-2
Millsdale				
MnA	2s	Yes	No	F-1
Milton				
MpD3	6e	No	No	A-1
Morley				
MrA	1	Yes	No	A-1
Morley				
MsB	2e	Yes		
Morley			No	A-1
Milton			No	F-1
MvB	3e	Yes	No	F-5
Mortimer				
MwB2	4e	Yes	No	F-5
Mortimer				

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
NnA---------------------- Nappanee	3w	Yes*	No	F-7
NnB---------------------- Nappanee	3e	Yes*	No	F-7
NpA---------------------- Nappanee	3w	Yes*	No	F-7
NpB2--------------------- Nappanee	3e	Yes*	No	F-7
NrA----------------------	---	No		
Nappanee----------------			No	---
Urban land.				
OrA---------------------- Oshtemo	3s	Yes	No	A-1
OrB---------------------- Oshtemo	3e	Yes	No	A-1
OrC---------------------- Oshtemo	3e	No	No	A-1
OsB---------------------- Oshtemo	3e	Yes	No	A-1
OwB---------------------- Ottokee	3s	No	No	B-1
PbA---------------------- Patton	2w	Yes*	Yes	C-1
PmA---------------------- Pewamo	2w	Yes*	Yes	C-1
PnA----------------------	---	No		
Pewamo------------------			Yes	---
Urban land.				
Pt. Pits				
RcA---------------------- Randolph	3w	Yes*	No	C-2
RgB---------------------- Rawson	2e	Yes	No	A-1
RhA---------------------- Rensselaer	2w	Yes*	Yes	C-1
RnA---------------------- Rimer	2w	Yes*	No	C-1
RoA---------------------- Rimer	2w	Yes*	No	C-1

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
RtA---------------------- Rossburg	2w	Yes	No	A-5
SeA---------------------- Shawtown	1	Yes	No	A-1
SeB---------------------- Shawtown	2e	Yes	No	A-1
SfB---------------------- Shinrock	2e	Yes	No	A-6
SgC2--------------------- Shinrock	3e	No	No	A-6
SkB----------------------	2e	Yes		
Shinrock----------------			No	A-6
Glynwood----------------			No	A-6
SmA---------------------- Shoals	2w	Yes*	No	C-3
SnA---------------------- Sloan	3w	Yes*	Yes	C-3
SoA---------------------- Sloan	3w	Yes*	Yes	C-3
SpA---------------------- Sloan	3w	Yes*	Yes	C-3
StB2--------------------- St. Clair	3e	Yes	No	F-5
StC2--------------------- St. Clair	4e	No	No	F-5
ThA---------------------- Thackery	1	Yes	No	A-1
TkA---------------------- Tiderishi	2w	Yes*	No	C-1
TnA---------------------- Toledo	3w	Yes*	Yes	C-2
ToB---------------------- Tuscola	2e	Yes	No	A-6
TpA---------------------- Tuscola	1	Yes	No	A-6
TpB---------------------- Tuscola	2e	Yes	No	A-6
TuB---------------------- Tuscola	2e	Yes	No	A-6

See footnotes at end of table.

Interpretive Groups--Continued

Map symbol and soil name	Land capability classification	Prime farmland	Hydric soil	Pasture and hayland suitability group
UcA---------------------- Udorthents	---	No	No	---
UcD---------------------- Udorthents	---	No	No	---
Ur. Urban land				
VaA---------------------- Vanlue	2w	Yes*	No	C-1
VeA---------------------- Vaughnsville	1	Yes	No	A-1
WeA----------------------	2w	Yes*		
Westland----------------			Yes	C-1
Rensselaer--------------			Yes	C-1

* If drained.

** If protected from flooding or not frequently flooded during the growing season.

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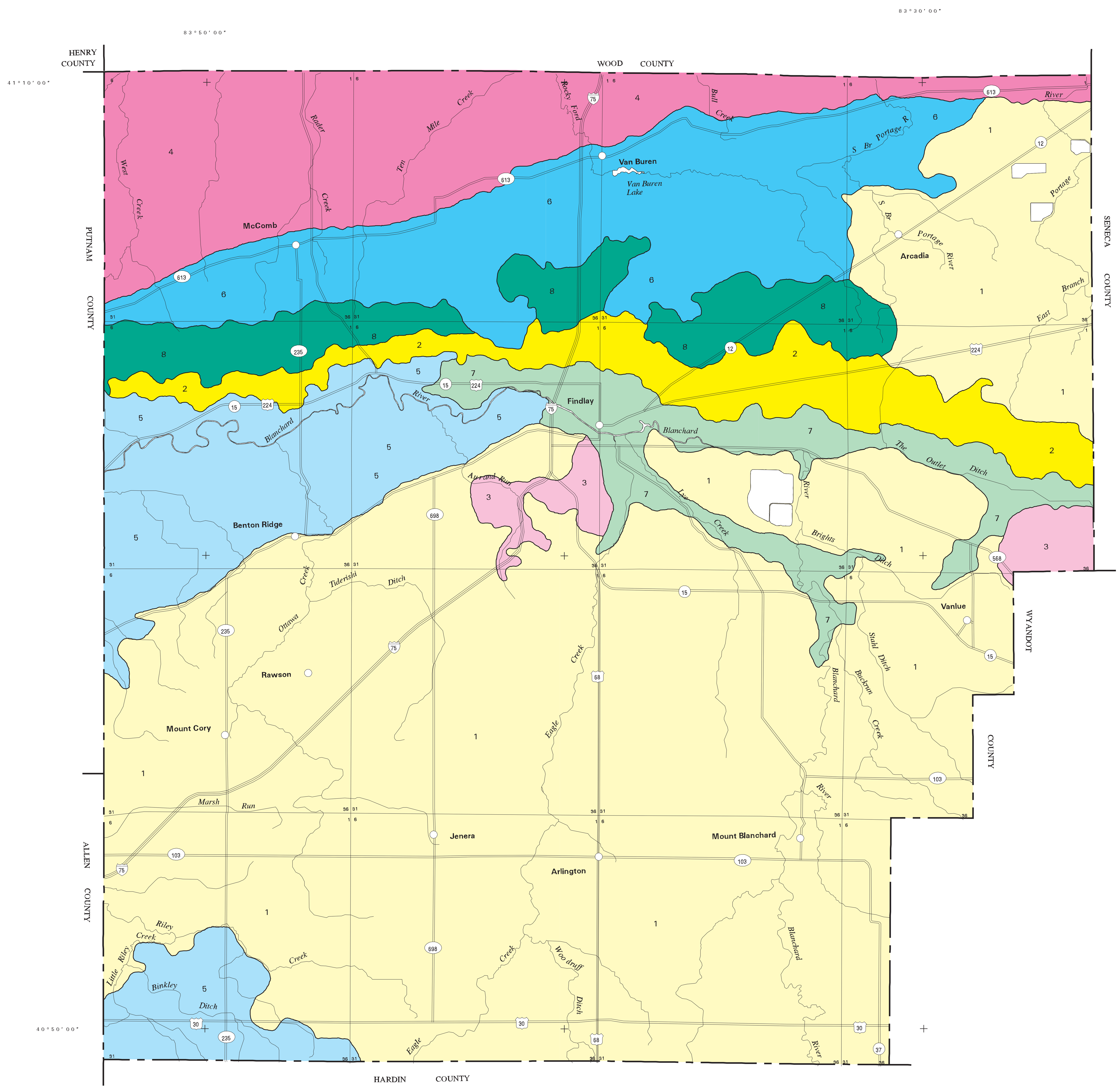


SOIL LEGEND*

1	Blount-Pewamo association
2	Blount-Glynwood-Pewamo association
3	Millsdale-Milton-Morley, limestone substratum, association
4	Hoytville-Nappanee association
5	Pewamo-Vanlue-Tiderishi association
6	Pewamo-Blount-Houcktown association
7	Alvada-Lamberjack-Sloan association
8	Pewamo-Del Rey-Blount association

*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 1997

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF SOIL AND WATER CONSERVATION
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION
HANCOCK SOIL AND WATER CONSERVATION DISTRICT
HANCOCK COUNTY COMMISSIONERS

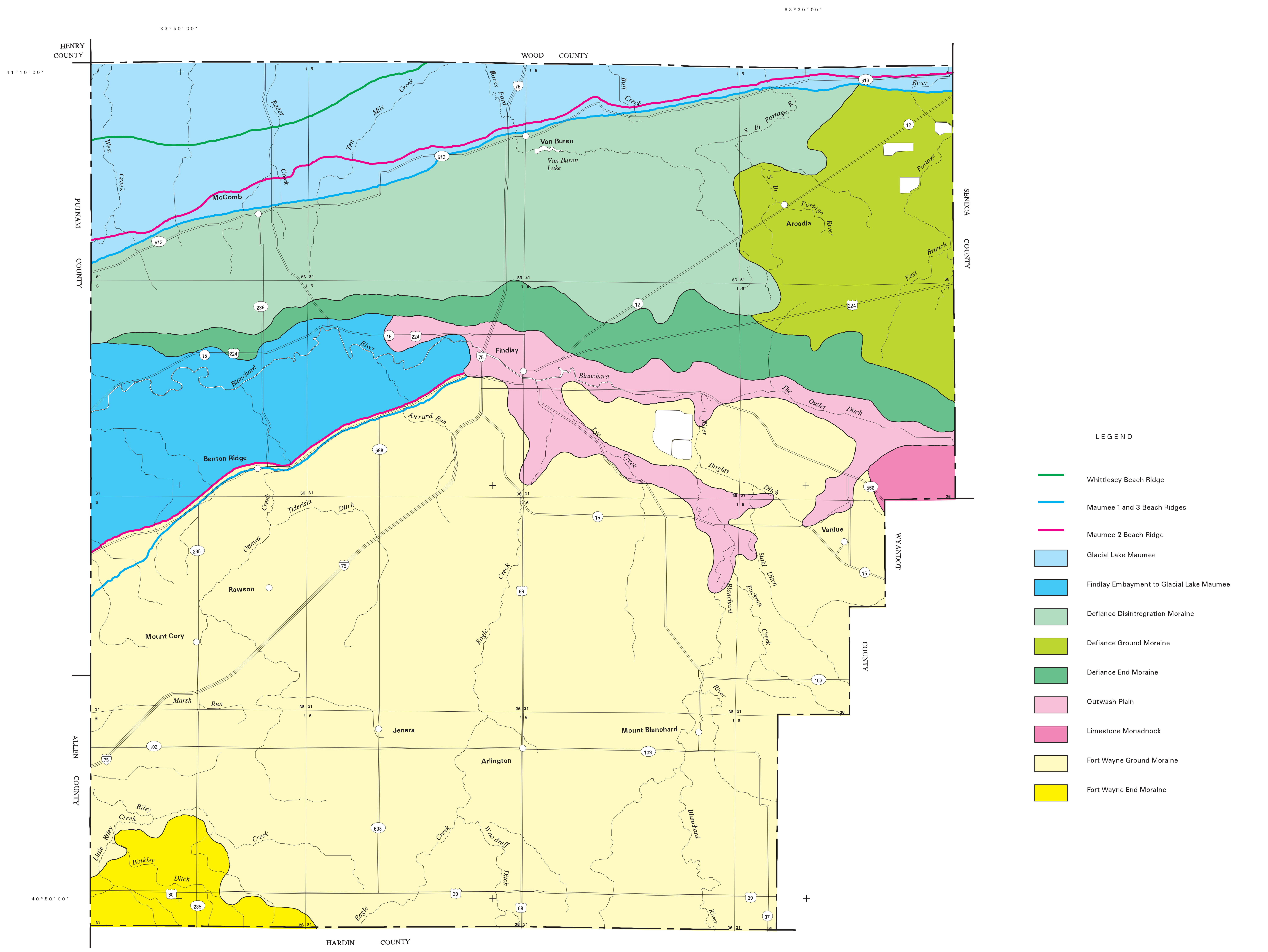
GENERAL SOIL MAP
HANCOCK COUNTY, OHIO

MILES

KILOMETERS

SCALE = 1:115000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



SECTIONALIZED TOWNSHIP

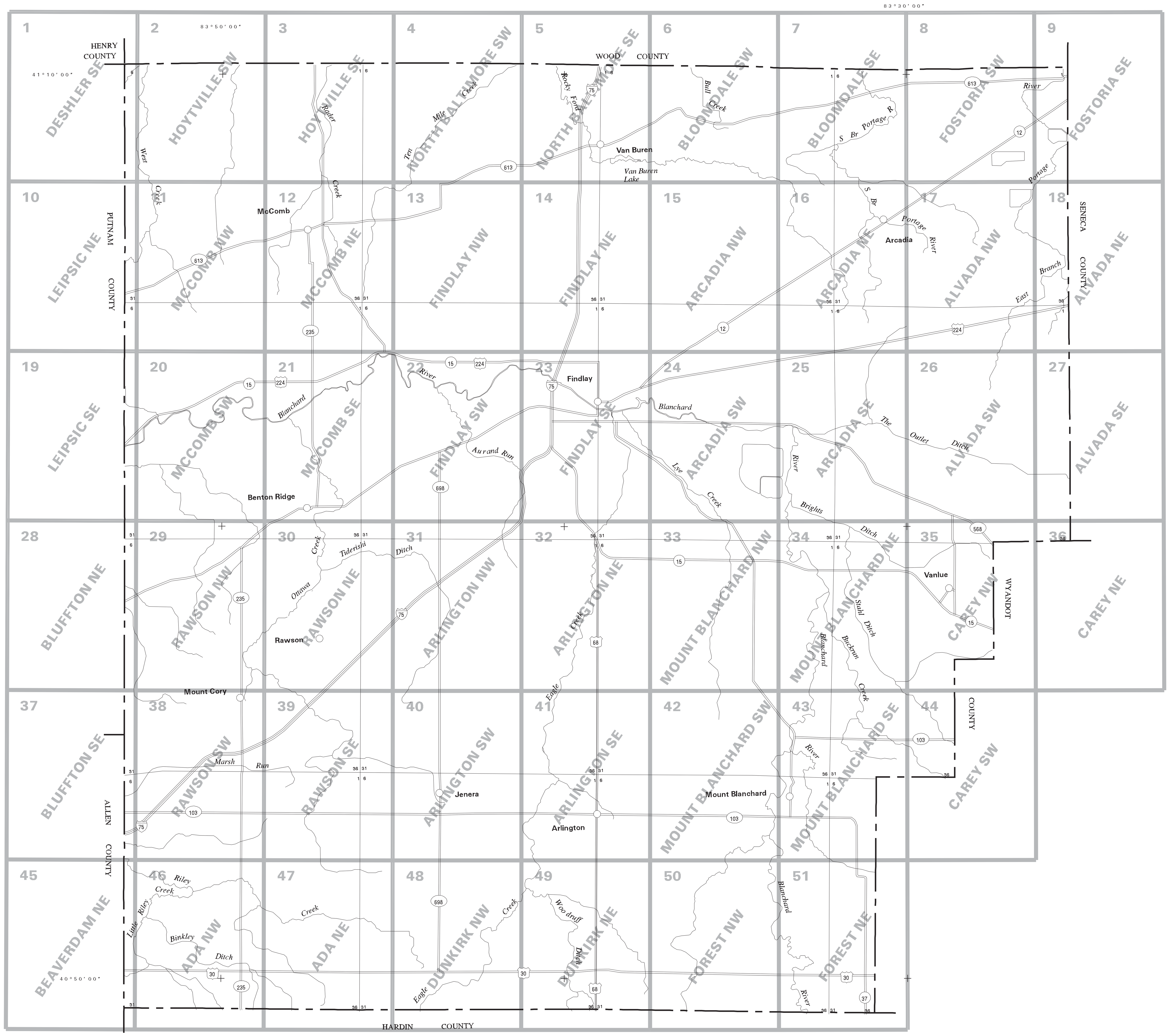
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

GEOMORPHIC LANDFORM MAP
HANCOCK COUNTY, OHIO

MILES

KILOMETERS

SCALE = 1:115000



SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

INDEX TO MAP SHEETS
HANCOCK COUNTY, OHIO

MILES

KILOMETERS

SCALE = 1:115000

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO

OHIO DEPARTMENT OF NATURAL RESOURCES, DIVISION OF SOIL AND WATER CONSERVATION
OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
OHIO STATE UNIVERSITY EXTENSION
HANCOCK SOIL AND WATER CONSERVATION DISTRICT
HANCOCK COUNTY COMMISSIONERS

SOIL LEGEND

Map symbols consist of a combination of letters and numbers. The first uppercase letter is the initial letter of the map unit name. The lowercase letter that follows separates map units that begin with the same letter. It does not separate sloping or eroded phases. The second uppercase letter indicates the class of slope. Symbols without a slope letter are for miscellaneous areas. A number 2 at the end of a symbol indicates that the map unit is moderately eroded, and a number 3 indicates that it is severely eroded.

SYMBOL	NAME
AdA	Adrian muck, 0 to 1 percent slopes
AkA	Alvada loam, 0 to 1 percent slopes
AmA	Alvada-Urban land complex, 0 to 2 percent slopes
AnA	Aquents, clayey, 0 to 1 percent slopes
ApB	Arkport loamy fine sand, 2 to 6 percent slopes
ArA	Aurand loam, 0 to 2 percent slopes
AsA	Aurand-Urban land complex, 0 to 2 percent slopes
BgA	Biglick-Milton complex, 0 to 2 percent slopes
BgB	Biglick-Milton complex, 2 to 6 percent slopes
BnA	Blount loam, 0 to 2 percent slopes
BoA	Blount silt loam, 0 to 2 percent slopes
BoB	Blount silt loam, 2 to 4 percent slopes
BpA	Blount-Houcktown complex, 0 to 3 percent slopes
BrA	Blount-Jenera complex, 0 to 3 percent slopes
BuA	Blount-Urban land complex, 0 to 2 percent slopes
ChC	Channahon-Biglick complex, 6 to 12 percent slopes
CoA	Colwood loam, 0 to 1 percent slopes
CtA	Cygnet loam, 0 to 2 percent slopes
CuA	Cygnet-Urban land complex, 0 to 2 percent slopes
DbA	Darroch loam, 0 to 2 percent slopes
DeA	Del Rey silt loam, 0 to 2 percent slopes
DfA	Del Rey-Blount complex, 0 to 3 percent slopes
DuB	Dunbridge loamy fine sand, 1 to 4 percent slopes
EmA	Elliott silt loam, 0 to 2 percent slopes
FbA	Flatrock loam, 0 to 2 percent slopes, occasionally flooded
FcA	Flatrock silt loam, 0 to 2 percent slopes, occasionally flooded
FdA	Flatrock silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded
FoA	Fox loam, 0 to 2 percent slopes
FoB	Fox loam, 2 to 6 percent slopes
FoC2	Fox loam, 6 to 12 percent slopes, eroded
FsA	Fulton silt loam, 0 to 2 percent slopes
FtA	Fulton silt loam, till substratum, 0 to 2 percent slopes
GaB	Gallman loam, 2 to 6 percent slopes
GfA	Gilford mucky loam, 0 to 1 percent slopes
GmA	Glynwood loam, limestone substratum, 0 to 2 percent slopes
GnB	Glynwood silt loam, 2 to 6 percent slopes
GpB2	Glynwood silty clay loam, 2 to 6 percent slopes, eroded
GpC2	Glynwood silty clay loam, 6 to 12 percent slopes, eroded
GsB	Glynwood-Blount-Houcktown complex, 1 to 4 percent slopes
GuB	Glynwood-Urban land complex, 2 to 6 percent slopes
HaA	Harrod silt loam, 0 to 1 percent slopes, frequently flooded
HkA	Haskins fine sandy loam, 0 to 2 percent slopes
HnA	Haskins loam, 0 to 2 percent slopes
HpA	Houcktown loam, 0 to 2 percent slopes
HpB	Houcktown loam, 2 to 6 percent slopes
HrB	Houcktown-Glynwood-Jenera complex, 1 to 4 percent slopes
HsA	Hoytville silty clay loam, 0 to 1 percent slopes
HtA	Hoytville silty clay, 0 to 1 percent slopes
JeA	Jenera fine sandy loam, 0 to 2 percent slopes
JeB	Jenera fine sandy loam, 2 to 6 percent slopes
JfB	Jenera-Shinrock, till substratum, complex, 1 to 4 percent slopes
JoA	Joliet loam, 0 to 1 percent slopes
KnA	Knoxdale silt loam, 0 to 2 percent slopes, occasionally flooded
LbA	Lamberjack loam, 0 to 2 percent slopes
LcA	Lamberjack-Urban land complex, 0 to 2 percent slopes
LuB2	Lucas silty clay loam, 2 to 6 percent slopes, eroded
LyE	Lybrand silt loam, 18 to 50 percent slopes
MbA	Medway silt loam, 0 to 2 percent slopes, occasionally flooded
McA	Medway silt loam, limestone substratum, 0 to 2 percent slopes, occasionally flooded
MeA	Mermill loam, 0 to 1 percent slopes
MfA	Mermill clay loam, 0 to 1 percent slopes
MgA	Millsdale silty clay loam, 0 to 1 percent slopes
MnA	Milton silt loam, 0 to 2 percent slopes
MpD3	Morley clay loam, 12 to 18 percent slopes, severely eroded
MrA	Morley loam, limestone substratum, 0 to 2 percent slopes
MsB	Morley, limestone substratum-Milton complex, 2 to 6 percent slopes
MvB	Mortimer silt loam, 2 to 6 percent slopes
MwB2	Mortimer silty clay loam, 2 to 6 percent slopes, eroded
NnA	Nappanee loam, 0 to 2 percent slopes
NnB	Nappanee loam, 2 to 6 percent slopes
NpA	Nappanee silty clay loam, 0 to 2 percent slopes
NpB2	Nappanee silty clay loam, 2 to 6 percent slopes, eroded
NrA	Nappanee-Urban land complex, 0 to 2 percent slopes
OrA	Oshtemo fine sandy loam, 0 to 2 percent slopes
OrB	Oshtemo fine sandy loam, 2 to 6 percent slopes
OrC	Oshtemo fine sandy loam, 6 to 12 percent slopes
OsB	Oshtemo sandy loam, till substratum, 2 to 6 percent slopes
OwB	Ottokee loamy fine sand, 0 to 6 percent slopes
PbA	Patton silty clay loam, 0 to 1 percent slopes
PmA	Pewamo silty clay loam, 0 to 1 percent slopes
PnA	Pewamo-Urban land complex, 0 to 2 percent slopes
Pt	Pits, quarry
RcA	Randolph silt loam, 0 to 2 percent slopes
RgB	Rawson sandy loam, 2 to 6 percent slopes
RhA	Rensselaer loam, till substratum, 0 to 1 percent slopes
RnA	Rimer loamy sand, 0 to 2 percent slopes
RoA	Rimer loamy fine sand, deep phase, 0 to 2 percent slopes
RtA	Rossburg silt loam, 0 to 2 percent slopes, occasionally flooded
SeA	Shawtown loam, 0 to 2 percent slopes
SeB	Shawtown loam, 2 to 6 percent slopes
SfB	Shinrock silt loam, 2 to 6 percent slopes
SgC2	Shinrock silty clay loam, 6 to 12 percent slopes, eroded
SkB	Shinrock, till substratum-Glynwood complex, 1 to 4 percent slopes
SmA	Shoals silt loam, 0 to 2 percent slopes, occasionally flooded
SnA	Sloan loam, 0 to 1 percent slopes, occasionally flooded
SoA	Sloan silty clay loam, 0 to 1 percent slopes, occasionally flooded
SpA	Sloan silty clay loam, limestone substratum, 0 to 1 percent slopes, occasionally flooded
StB2	St. Clair silty clay loam, 2 to 6 percent slopes, eroded
StC2	St. Clair silty clay loam, 6 to 12 percent slopes, eroded
ThA	Thackery loam, till substratum, 0 to 2 percent slopes
TkA	Tiderishi loam, 0 to 2 percent slopes
TnA	Toledo silty clay loam, 0 to 1 percent slopes
ToB	Tuscola loamy fine sand, 2 to 6 percent slopes
TpA	Tuscola fine sandy loam, 0 to 2 percent slopes
TpB	Tuscola fine sandy loam, 2 to 6 percent slopes
TuB	Tuscola silt loam, 2 to 6 percent slopes
UcA	Udorthents, loamy, 0 to 2 percent slopes
UcD	Udorthents, loamy, 2 to 25 percent slopes
Ur	Urban land
VaA	Vanlue loam, 0 to 2 percent slopes
VeA	Vaughnsville loam, 0 to 3 percent slopes
W	Water
WeA	Westland-Rensselaer complex, 0 to 1 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park)
- Land grant
- Limit of soil survey (label) and/or denied access area
- Field sheet matchline and neatline
- Previously published survey

OTHER BOUNDARY

- Airport, airfield
- Cemetery
- Abandoned petroleum storage facility

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(section and land grants)

GEOGRAPHIC COORDINATE TICK

TRANSPORTATION

- Divided roads
- Other roads
- Trail

ROAD EMBLEMS AND DESIGNATIONS

- Interstate 173 79 345
- Federal 287 410 224
- State 52 52 347
- County, township 1283

RAILROAD

POWER TRANSMISSION LINE

PIPELINE

FENCE

LEVEES

- Without road
- With road
- With railroad
- Single side slope (showing actual feature location)

DAMS

- Medium or small

LANDFORM FEATURES

- Prominent hill or peak
- Soil sample site

CULTURAL FEATURES

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house
- Church
- School
- Other religion Mt Carmel
- Located object Ranger Station
- Tank Petroleum
- Lookout tower
- Oil and/or natural gas wells
- Windmill
- Lighthouse

HYDROGRAPHIC FEATURES

STREAMS

- Perennial stream, double line
- Perennial stream, single line
- Intermittent stream
- Drainage end

DRAINAGE AND IRRIGATION

- Double-line canal CANAL
- Perennial drainage and/or irrigation ditch
- Intermittent drainage and/or irrigation ditch

SMALL LAKES, PONDS, AND RESERVOIRS

- Perennial water
- Miscellaneous water
- Flood pool line FLOOD POOL LINE

MISCELLANEOUS WATER FEATURES

- Spring
- Well, artesian
- Well, irrigation

SPECIAL SYMBOLS FOR SOIL SURVEY AND SSURGO

SOIL DELINEATIONS AND SYMBOLS AfB AmB

LANDFORM FEATURES

- Bedrock escarpments
- Other than bedrock escarpments
- Short steep slope
- Gully
- Depression, closed
- Sinkhole
- Borrow pit
- Gravel pit
- Mine or quarry
- Landfill

MISCELLANEOUS SURFACE FEATURES

- Blowout
- Clay spot
- Gravelly spot
- Lava flow
- Marsh or swamp
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip
- Sodic spot
- Spoil area
- Stony spot
- Very stony spot
- Wet spot

SPECIAL SYMBOLS

- Cut or fill area
- Lime pit
- Muck spot
- Typical pedon site

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
DESHLER SE QUADRANGLE
SHEET NUMBER 1 OF 51

83° 56′15″ 83° 52′30″

41° 11′15″

41° 07′30″

83° 56′15″ 83° 52′30″

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

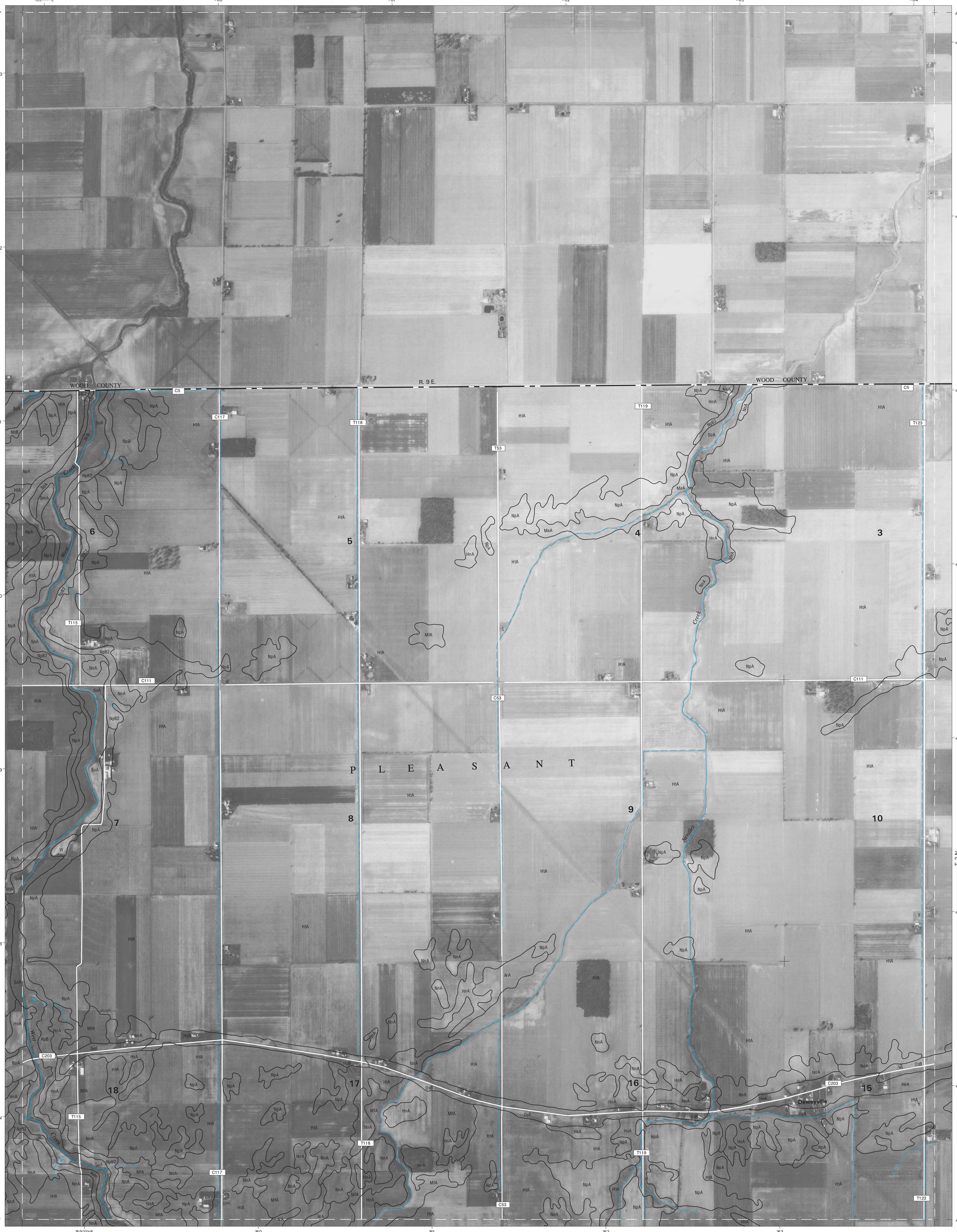
2 HOYTVILLE SW
10 LEIPSIC NE
11 MCCOMB NW
INDEX TO ADJOINING 3.75 MAPS

DESHLER SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 1 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

83° 52′30″ 83° 48′45″
41° 11′15″ 41° 11′15″



41° 07′30″ 41° 07′30″
83° 52′30″ 83° 48′45″

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

1 DESHLER SE
3 HOYTVILLE SE
10 LEIPSIC NE
11 MCCOMB NW
12 MCCOMB NE

INDEX TO ADJOINING 3.75 MAPS

HOYTVILLE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 2 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
HOYTVILLE SE QUADRANGLE
SHEET NUMBER 3 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

		4
2	■	
11	12	13

2 HOYTVILLE SW
4 NORTH BALTIMORE SW
11 MCCOMB NW
12 MCCOMB NE
13 FINDLAY NW

INDEX TO ADJOINING 3.75 MAPS

HOYTVILLE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 3 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
NORTH BALTIMORE SW QUADRANGLE
SHEET NUMBER 4 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

3		5
12	13	14

3 HOYTVILLE SE
5 NORTH BALTIMORE SE
12 MCCOMB NE
13 FINDLAY NW
14 FINDLAY NE

INDEX TO ADJOINING 3.75 MAPS

NORTH BALTIMORE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 4 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
NORTH BALTIMORE SE QUADRANGLE
SHEET NUMBER 5 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

4 NORTH BALTIMORE SW
6 BLOOMDALE SW
13 FINDLAY NW
14 FINDLAY NE
15 ARCADIA NW

INDEX TO ADJOINING 3.75 MAPS

NORTH BALTIMORE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 5 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

5		7
14	15	16

5 NORTH BALTIMORE SE
7 BLOOMDALE SE
14 FINDLAY NE
15 ARCADIA NW
16 ARCADIA NE

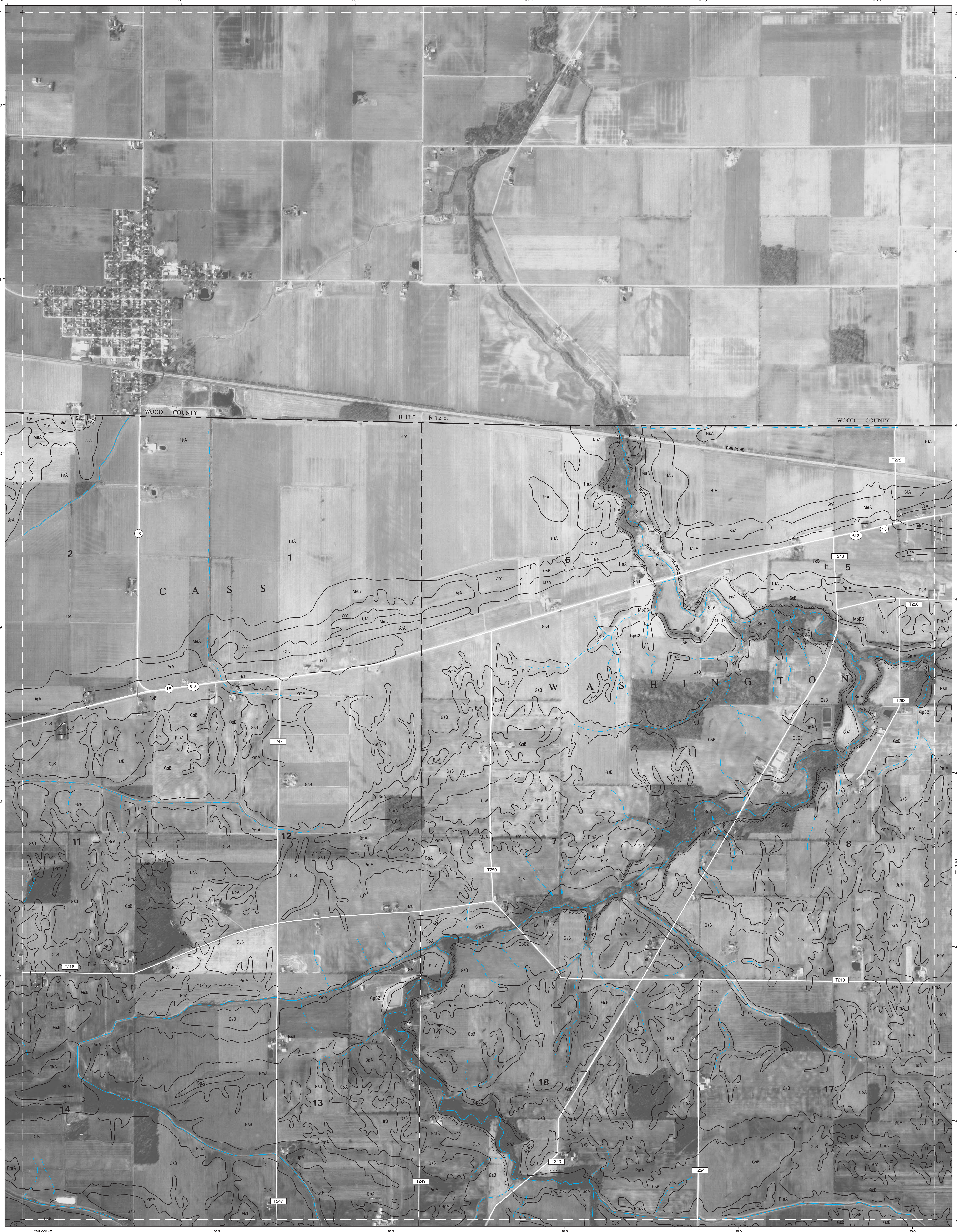
INDEX TO ADJOINING 3.75 MAPS

BLOOMDALE SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 6 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
BLOOMDALE SE QUADRANGLE
SHEET NUMBER 7 OF 51



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

6		8
15	16	17

6 BLOOMDALE SW
8 FOSTORIA SW
15 ARCADIA NW
16 ARCADIA NE
17 ALVADA NW

INDEX TO ADJOINING 3.75 MAPS

BLOOMDALE SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 7 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FOSTORIA SW QUADRANGLE
SHEET NUMBER 8 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

7 BLOOMDALE SE
9 FOSTORIA SE
16 ARCADIA NE
17 ALVADA NW
18 ALVADA NE

INDEX TO ADJOINING 3.75 MAPS

FOSTORIA SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 8 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FOSTORIA SE QUADRANGLE
SHEET NUMBER 9 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

INDEX TO ADJOINING 3.75 MAPS

8 FOSTORIA SW
17 ALVADA NW
18 ALVADA NE

FOSTORIA SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 9 OF 51

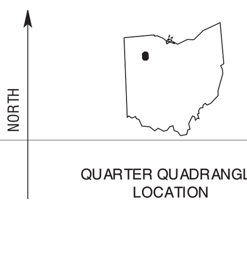
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
LEIPSIC NE QUADRANGLE
SHEET NUMBER 10 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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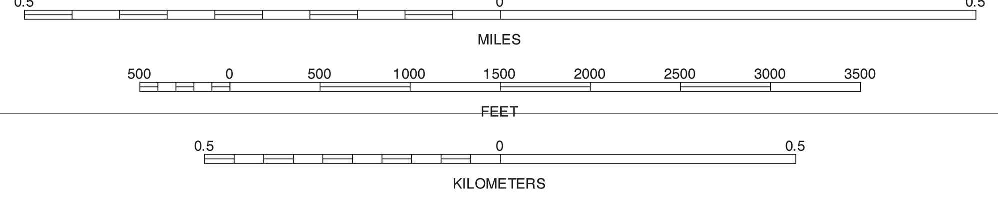
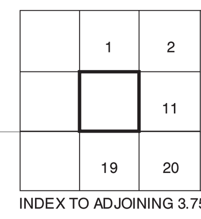




1 DESHLER SE
2 HOYTVILLE SW
11 MCCOMB NW
19 LEIPSIC SE
20 MCCOMB SW

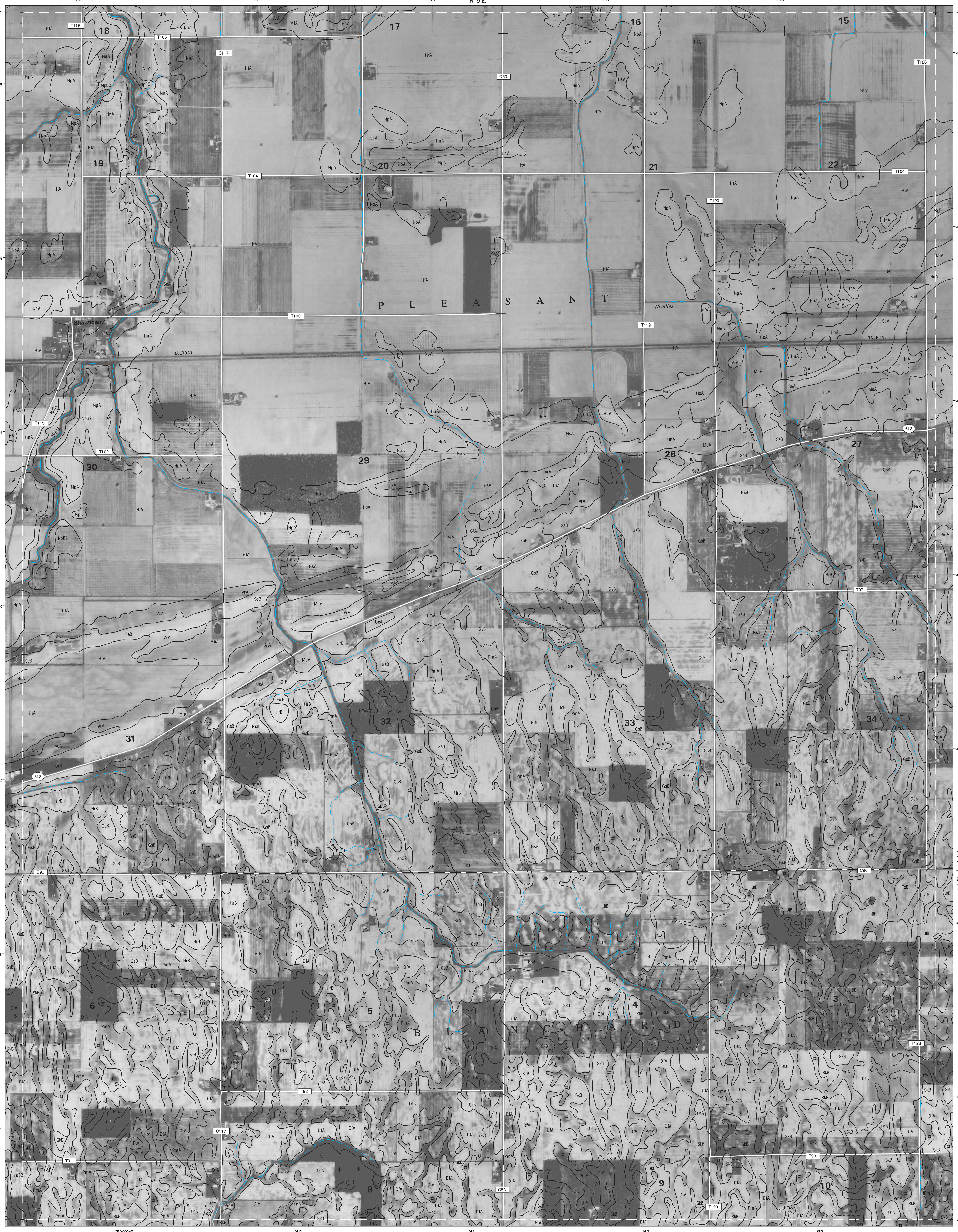
INDEX TO ADJOINING 3.75 MAPS

LEIPSIC NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 10 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MCCOMB NW QUADRANGLE
SHEET NUMBER 11 OF 51



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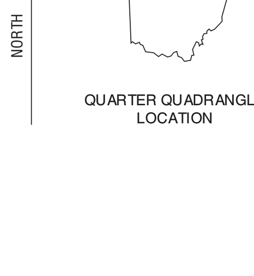
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 0 0.5 KILOMETERS

1	2	3
10		12
19	20	21

1 DESHLER SE
2 HOYTVILLE SW
3 HOYTVILLE SE
10 LEIPSIC NE
12 MCCOMB NE
19 LEIPSIC SE
20 MCCOMB SW
21 MCCOMB SE

INDEX TO ADJOINING 3.75 MAPS

MCCOMB NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 11 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MCCOMB NE QUADRANGLE
SHEET NUMBER 12 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

2	3	4
11		13
20	21	22

2 HOYTVILLE SW
3 HOYTVILLE SE
4 NORTH BALTIMORE SW
11 MCCOMB NW
13 FINDLAY NW
20 MCCOMB SW
21 MCCOMB SE
22 FINDLAY SW

INDEX TO ADJOINING 3.75 MAPS

MCCOMB NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 12 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FINDLAY NW QUADRANGLE
SHEET NUMBER 13 OF 51

83° 45'00" | 83° 41'15"
41° 07'30" | 41° 07'30"

41° 03'45" | 41° 03'45"
83° 45'00" | 83° 41'15"

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

3	4	5
12		14
21	22	23

3 HOYTVILLE SE
4 NORTH BALTIMORE SW
5 NORTH BALTIMORE SE
12 MCCOMB NE
14 FINDLAY NE
21 MCCOMB SE
22 FINDLAY SW
23 FINDLAY SE

INDEX TO ADJOINING 3.75 MAPS

FINDLAY NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 13 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

4	5	6
13		15
22	23	24

4 NORTH BALTIMORE SW
5 NORTH BALTIMORE SE
6 BLOOMDALE SW
13 FINDLAY NW
15 ARCADIA NW
22 FINDLAY SW
23 FINDLAY SE
24 ARCADIA SW

INDEX TO ADJOINING 3.75 MAPS

FINDLAY NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 14 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARCADIA NW QUADRANGLE
SHEET NUMBER 15 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

5	6	7
14		16
23	24	25

5 NORTH BALTIMORE SE
6 BLOOMDALE SW
7 BLOOMDALE SE
14 FINDLAY NE
16 ARCADIA NE
23 FINDLAY SE
24 ARCADIA SW
25 ARCADIA SE

INDEX TO ADJOINING 3.75 MAPS

ARCADIA NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 15 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARCADIA NE QUADRANGLE
SHEET NUMBER 16 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

6	7	8
15		17
24	25	26

6 BLOOMDALE SW
7 BLOOMDALE SE
8 FOSTORIA SW
15 ARCADIA NW
17 ALVADA NW
24 ARCADIA SW
25 ARCADIA SE
26 ALVADA SW

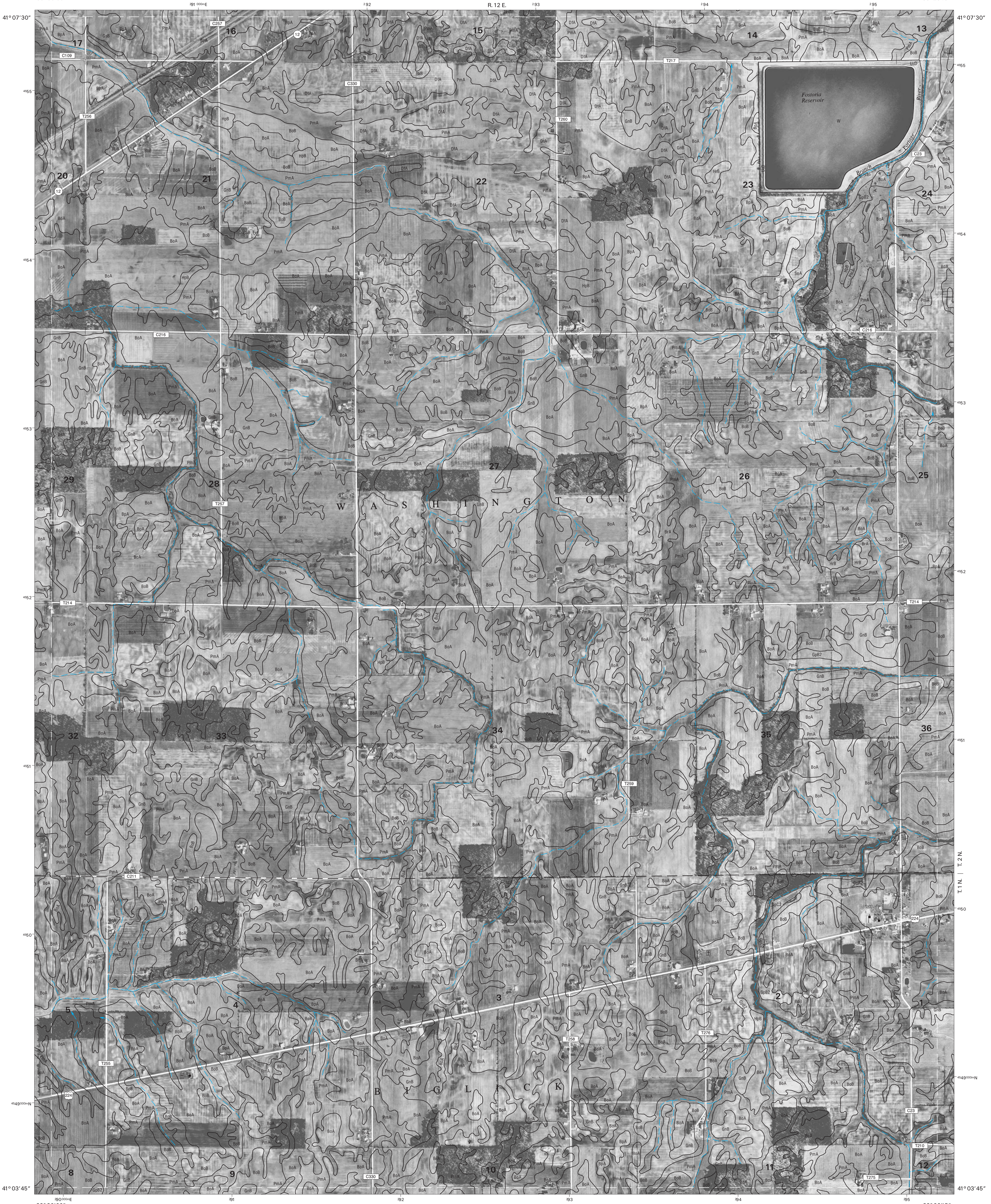
INDEX TO ADJOINING 3.75 MAPS

ARCADIA NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 16 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ALVADA NW QUADRANGLE
SHEET NUMBER 17 OF 51



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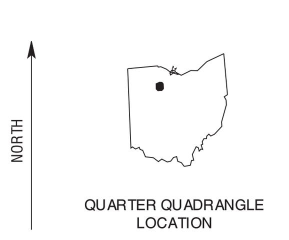
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

7	8	9
16		18
25	26	27

7 BLOOMDALE SE
8 FOSTORIA SW
9 FOSTORIA SE
16 ARCADIA NE
18 ALVADA NE
25 ARCADIA SE
26 ALVADA SW
27 ALVADA SE

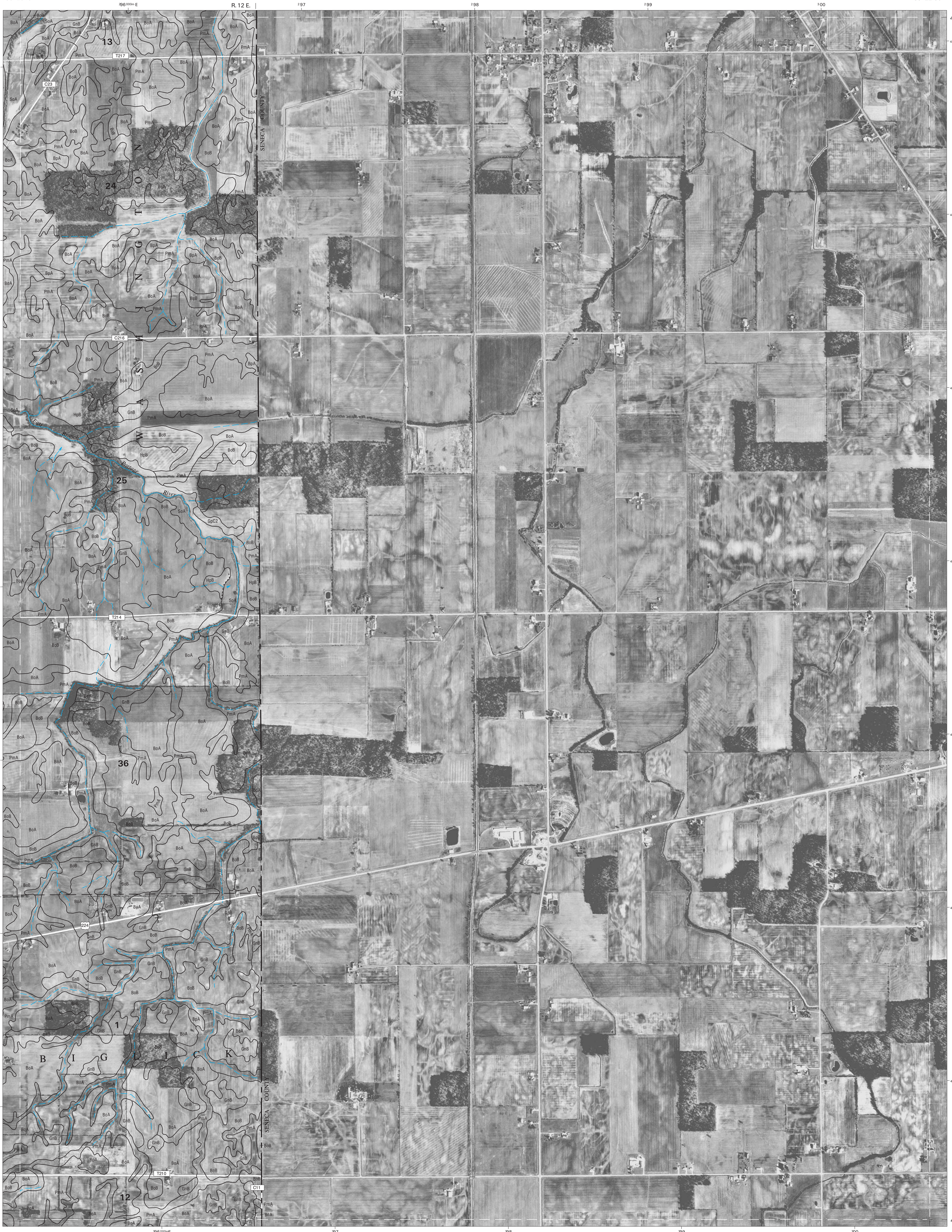
INDEX TO ADJOINING 3.75 MAPS

ALVADA NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 17 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ALVADA NE QUADRANGLE
SHEET NUMBER 18 OF 51



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

8	9	
17		
26	27	

8 FOSTORIA SW
9 FOSTORIA SE
17 ALVADA NW
26 ALVADA SW
27 ALVADA SE

INDEX TO ADJOINING 3.75 MAPS

ALVADA NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 18 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
LEIPSIC SE QUADRANGLE
SHEET NUMBER 19 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES 0.5 0 0.5

FEET 500 0 500 1000 1500 2000 2500 3000 3500

KILOMETERS 0.5 0 0.5

10	11	10 LEIPSIC NE 11 MCCOMB NW
	20	20 MCCOMB SW
28	29	28 BLUFFTON NE 29 RAWSON NW

INDEX TO ADJOINING 3.75 MAPS

LEIPSIC SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 19 OF 51

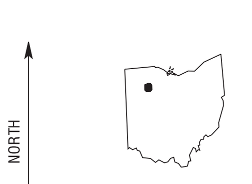
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MCCOMB SW QUADRANGLE
SHEET NUMBER 20 OF 51

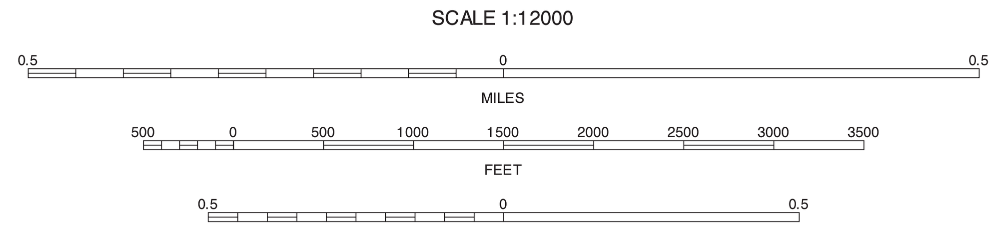
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



10	11	12
19		21
28	29	30

10 LEIPSIC NE
11 MCCOMB NW
12 MCCOMB NE
19 LEIPSIC SE
21 MCCOMB SE
28 BLUFFTON NE
29 RAWSON NW
30 RAWSON NE

INDEX TO ADJOINING 3.75 MAPS

MCCOMB SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 20 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MCCOMB SE QUADRANGLE
SHEET NUMBER 21 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

11	12	13
20		22
29	30	31

11 MCCOMB NW
12 MCCOMB NE
13 FINDLAY NW
20 MCCOMB SW
22 FINDLAY SW
29 RAWSON NW
30 RAWSON NE
31 ARLINGTON NW

INDEX TO ADJOINING 3.75 MAPS

MCCOMB SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 21 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FINDLAY SW QUADRANGLE
SHEET NUMBER 22 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

12	13	14
21		23
30	31	32

12 MCCOMB NE
13 FINDLAY NW
14 FINDLAY NE
21 MCCOMB SE
23 FINDLAY SE
30 RAWSON NE
31 ARLINGTON NW
32 ARLINGTON NE

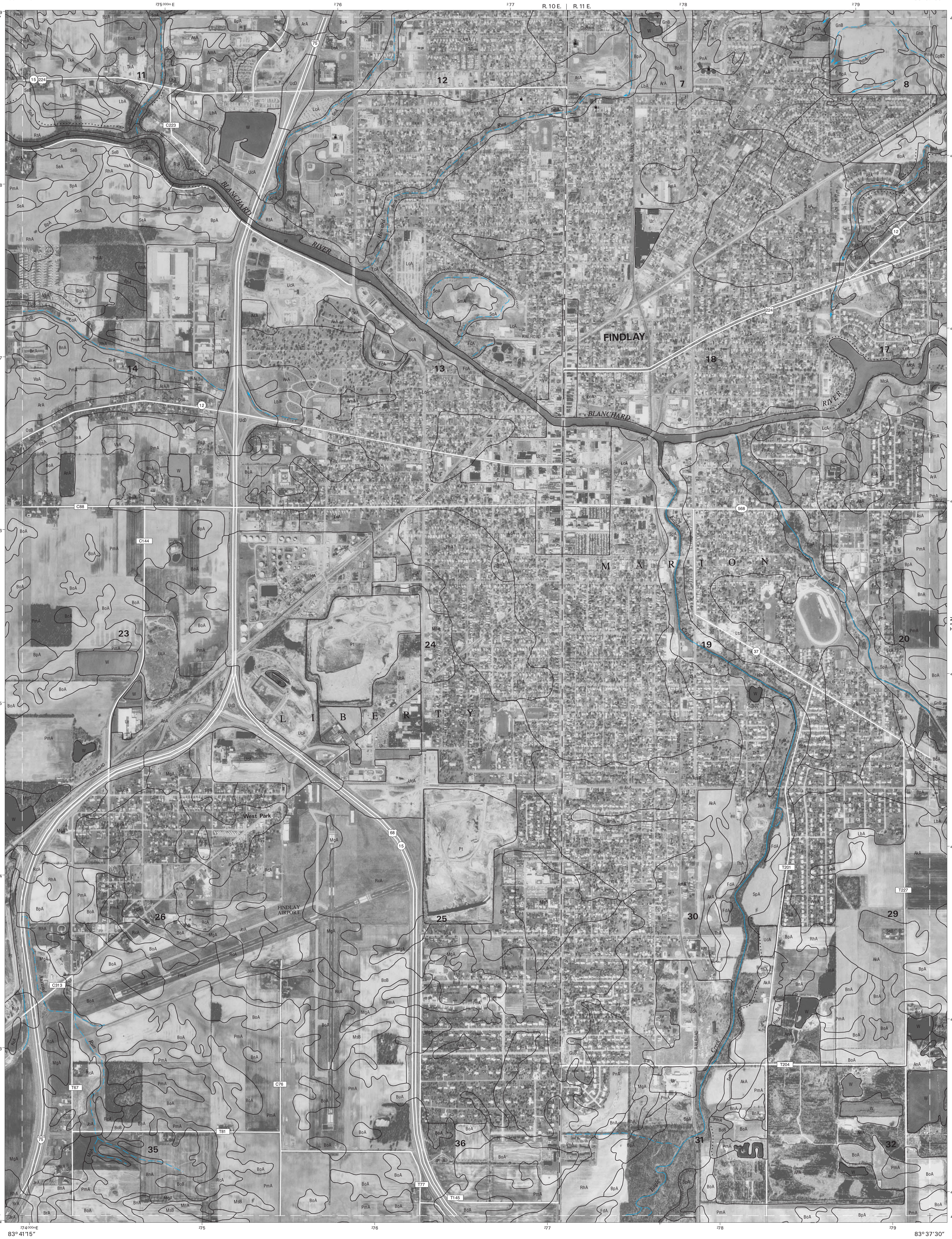
INDEX TO ADJOINING 3.75 MAPS

FINDLAY SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 22 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FINDLAY SE QUADRANGLE
SHEET NUMBER 23 OF 51



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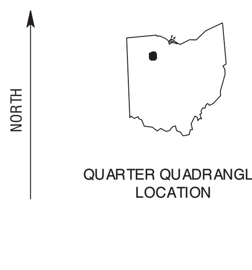
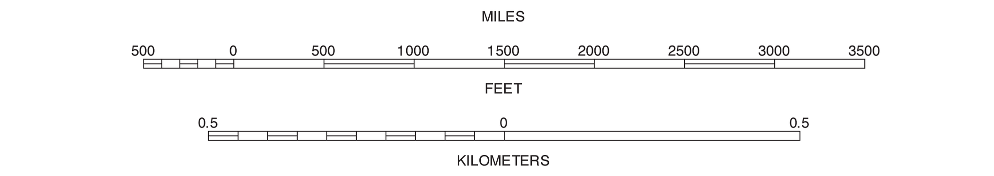


QUARTER QUADRANGLE LOCATION

SCALE 1:12000



13	14	15
22		24
31	32	33

13 FINDLAY NW
14 FINDLAY NE
15 ARCADIA NW
22 FINDLAY SW
24 ARCADIA SW
31 ARLINGTON NW
32 ARLINGTON NE
33 MOUNT BLANCHARD NW

INDEX TO ADJOINING 3.75 MAPS

FINDLAY SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 23 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARCADIA SW QUADRANGLE
SHEET NUMBER 24 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

14	15	16
23		25
32	33	34

14 FINDLAY NE
15 ARCADIA NW
16 ARCADIA NE
23 FINDLAY SE
25 ARCADIA SE
32 ARLINGTON NE
33 MOUNT BLANCHARD NW
34 MOUNT BLANCHARD NE

INDEX TO ADJOINING 3.75 MAPS

ARCADIA SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 24 OF 51

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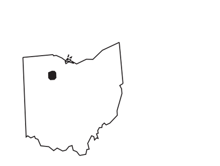
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARCADIA SE QUADRANGLE
SHEET NUMBER 25 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5 MILES

500 — 0 — 500 — 1000 — 1500 — 2000 — 2500 — 3000 — 3500 FEET

0.5 — 0 — 0.5 KILOMETERS

15	16	17
24		26
33	34	35

15 ARCADIA NW
16 ARCADIA NE
17 ALVADA NW
24 ARCADIA SW
26 ALVADA SW
33 MOUNT BLANCHARD NW
34 MOUNT BLANCHARD NE
35 CAREY NW

INDEX TO ADJOINING 3.75 MAPS

ARCADIA SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 25 OF 51

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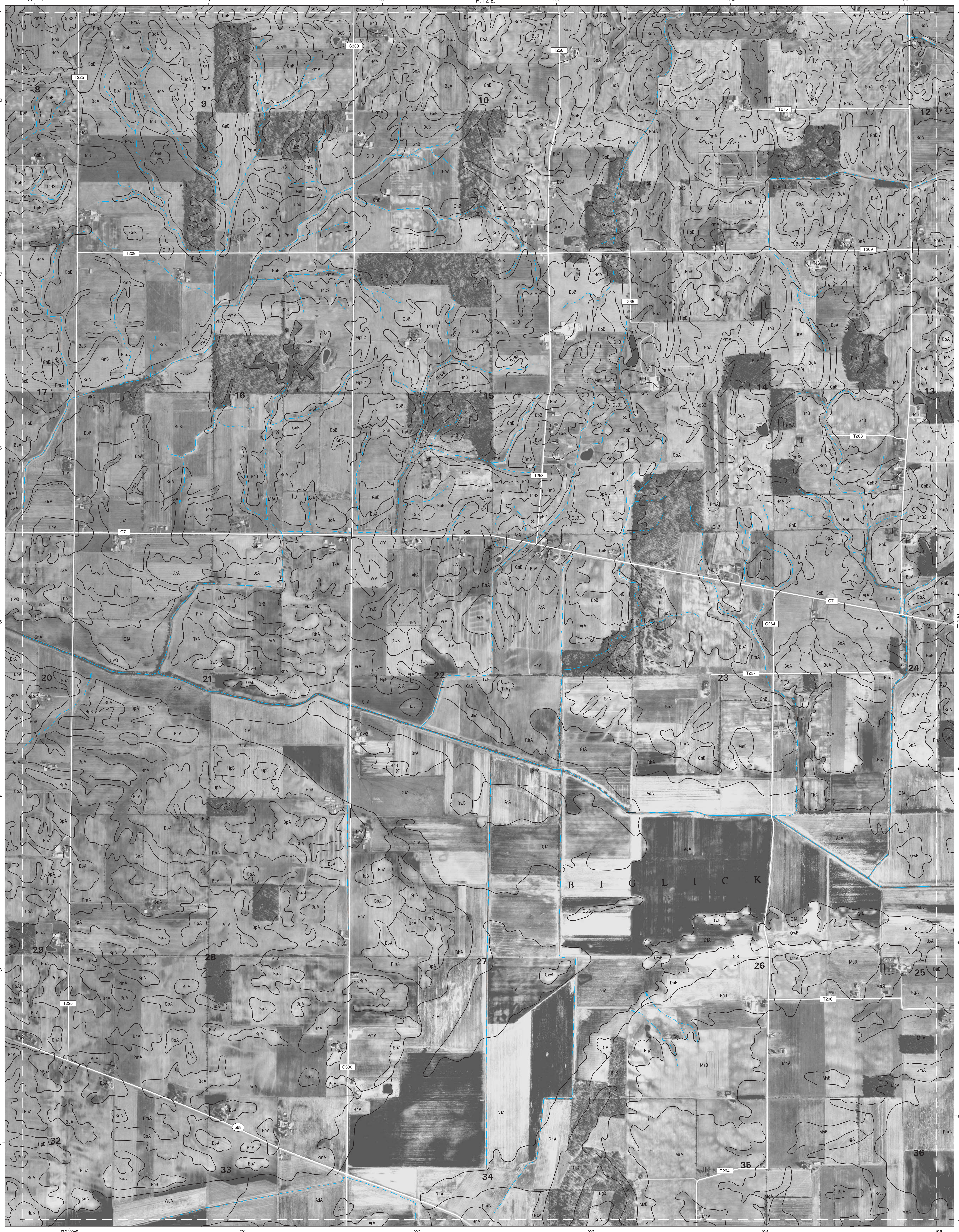
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ALVADA SW QUADRANGLE
SHEET NUMBER 26 OF 51



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

16	17	18
25		27
34	35	36

16 ARCADIA NE
17 ALVADA NW
18 ALVADA NE
25 ARCADIA SE
27 ALVADA SE
34 MOUNT BLANCHARD NE
35 CAREY NW
36 CAREY NE

INDEX TO ADJOINING 3.75 MAPS

ALVADA SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 26 OF 51

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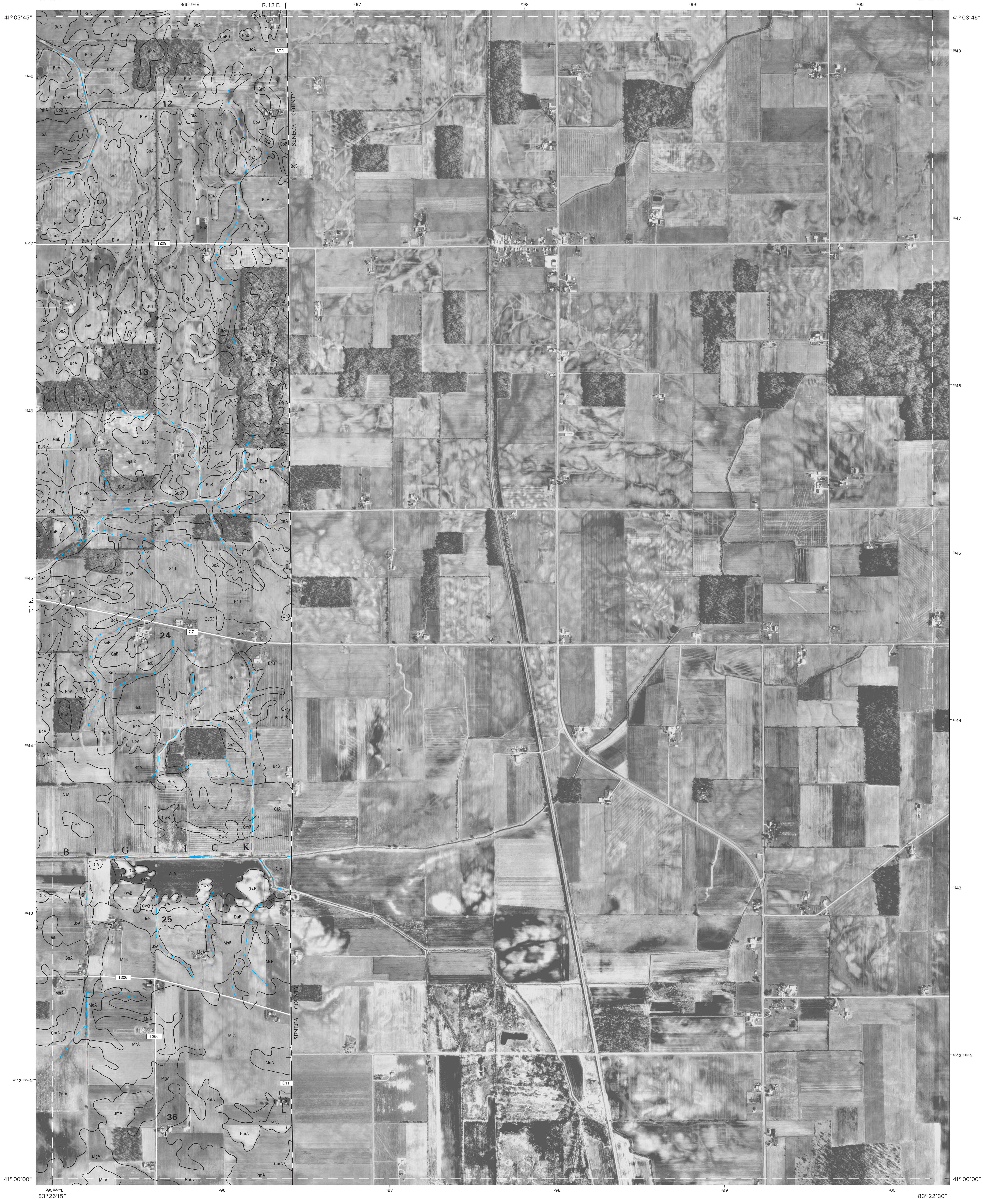
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ALVADA SE QUADRANGLE
SHEET NUMBER 27 OF 51



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

17	18		17 ALVADA NW 18 ALVADA NE
26			26 ALVADA SW
35	36		35 CAREY NW 36 CAREY NE

INDEX TO ADJOINING 3.75 MAPS

ALVADA SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 27 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
BLUFFTON NE QUADRANGLE
SHEET NUMBER 28 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid
1000-meter ticks: Universal Transverse Mercator, zone 17.
Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

	19	20	19 LEIPSIC SE 20 MCCOMB SW
	■	29	29 RAWSON NW
	37	38	37 BLUFFTON SE 38 RAWSON SW

INDEX TO ADJOINING 3.75 MAPS

BLUFFTON NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 28 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
RAWSON NW QUADRANGLE
SHEET NUMBER 29 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

19	20	21
28		30
37	38	39

19 LEIPSIC SE
20 MCCOMB SW
21 MCCOMB SE
28 BLUFFTON NE
30 RAWSON NE
37 BLUFFTON SE
38 RAWSON SW
39 RAWSON SE

INDEX TO ADJOINING 3.75 MAPS

RAWSON NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 29 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
RAWSON NE QUADRANGLE
SHEET NUMBER 30 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

20	21	22
29		31
38	39	40

20 MCCOMB SW
21 MCCOMB SE
22 FINDLAY SW
29 RAWSON NW
31 ARLINGTON NW
38 RAWSON SW
39 RAWSON SE
40 ARLINGTON SW

INDEX TO ADJOINING 3.75 MAPS

RAWSON NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 30 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARLINGTON NW QUADRANGLE
SHEET NUMBER 31 OF 51

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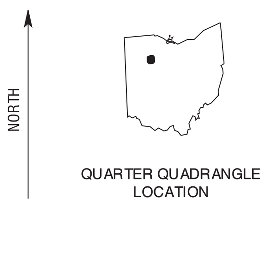
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 — 0 — 0.5 MILES

500 0 500 1000 1500 2000 2500 3000 3500 FEET

0.5 — 0 — 0.5 KILOMETERS

21	22	23
30		32
39	40	41

21 MCCOMB SE
22 FINDLAY SW
23 FINDLAY SE
30 RAWSON NE
32 ARLINGTON NE
39 RAWSON SE
40 ARLINGTON SW
41 ARLINGTON SE

INDEX TO ADJOINING 3.75 MAPS

ARLINGTON NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 31 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARLINGTON NE QUADRANGLE
SHEET NUMBER 32 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

22	23	24
31		33
40	41	42

22 FINDLAY SW
23 FINDLAY SE
24 ARCADIA SW
31 ARLINGTON NW
33 MOUNT BLANCHARD NW
40 ARLINGTON SW
41 ARLINGTON SE
42 MOUNT BLANCHARD SW

INDEX TO ADJOINING 3.75 MAPS

ARLINGTON NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 32 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MOUNT BLANCHARD NW QUADRANGLE
SHEET NUMBER 33 OF 51

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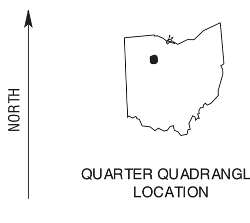

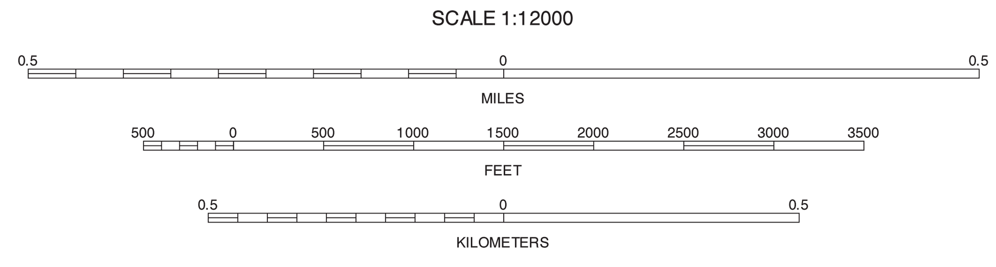

23	24	25
32		34
41	42	43

23 FINDLAY SE
24 ARCADIA SW
25 ARCADIA SE
32 ARLINGTON NE
34 MOUNT BLANCHARD NE
41 ARLINGTON SE
42 MOUNT BLANCHARD SW
43 MOUNT BLANCHARD SE

INDEX TO ADJOINING 3.75 MAPS

MOUNT BLANCHARD NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 33 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MOUNT BLANCHARD NE QUADRANGLE
SHEET NUMBER 34 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

24	25	26
33		35
42	43	44

24 ARCADIA SW
25 ARCADIA SE
26 ALVADA SW
33 MOUNT BLANCHARD NW
35 CAREY NW
42 MOUNT BLANCHARD SW
43 MOUNT BLANCHARD SE
44 CAREY SW

INDEX TO ADJOINING 3.75 MAPS

MOUNT BLANCHARD NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 34 OF 51

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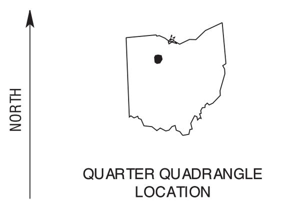
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
CAREY NW QUADRANGLE
SHEET NUMBER 35 OF 51

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1988-1995 aerial photography.

North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



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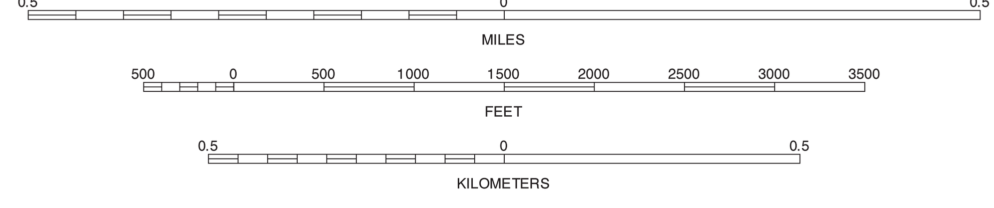

25	26	27
34		36
43	44	

25 ARCADIA SE
26 ALVADA SW
27 ALVADA SE
34 MOUNT BLANCHARD NE
36 CAREY NE
43 MOUNT BLANCHARD SE
44 CAREY SW

INDEX TO ADJOINING 3.75 MAPS

CAREY NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 35 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
CAREY NE QUADRANGLE
SHEET NUMBER 36 OF 51

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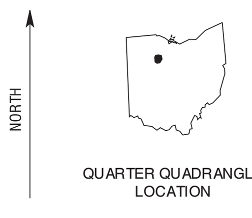
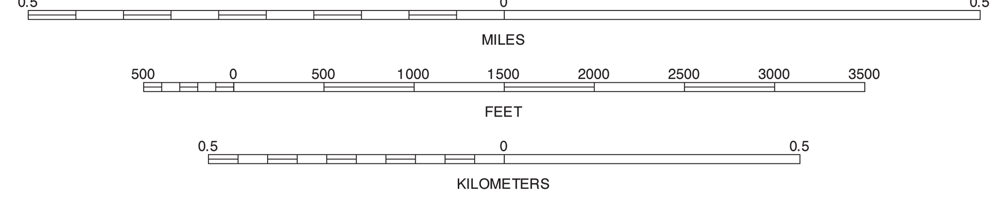


QUARTER QUADRANGLE LOCATION

SCALE 1:12000



26	27	
35		
44		

26 ALVADA SW
27 ALVADA SE
35 CAREY NW
44 CAREY SW

INDEX TO ADJOINING 3.75 MAPS

CAREY NE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 36 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
BLUFFTON SE QUADRANGLE
SHEET NUMBER 37 OF 51

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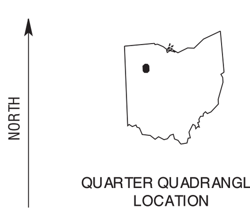
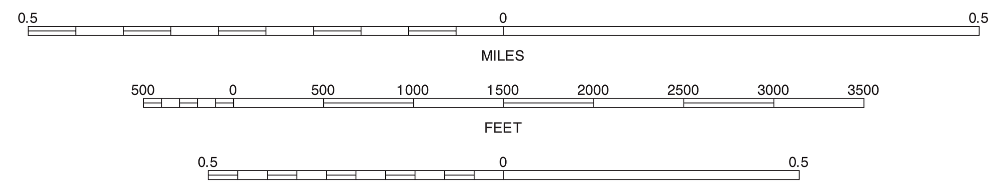
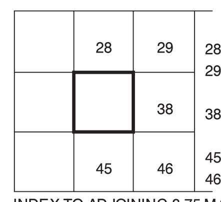


QUARTER QUADRANGLE LOCATION

SCALE 1:12000





28 BLUFFTON NE
29 RAWSON NW
38 RAWSON SW
45 BEAVERDAM NE
46 ADA NW

INDEX TO ADJOINING 3.75 MAPS

BLUFFTON SE, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 37 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
RAWSON SW QUADRANGLE
SHEET NUMBER 38 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

28	29	30
37		39
45	46	47

28 BLUFFTON NE
29 RAWSON NW
30 RAWSON NE
37 BLUFFTON SE
39 RAWSON SE
45 BEAVERDAM NE
46 ADA NW
47 ADA NE

INDEX TO ADJOINING 3.75 MAPS

RAWSON SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 38 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
RAWSON SE QUADRANGLE
SHEET NUMBER 39 OF 51

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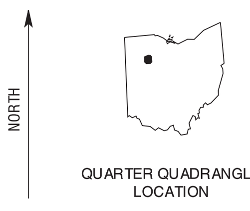
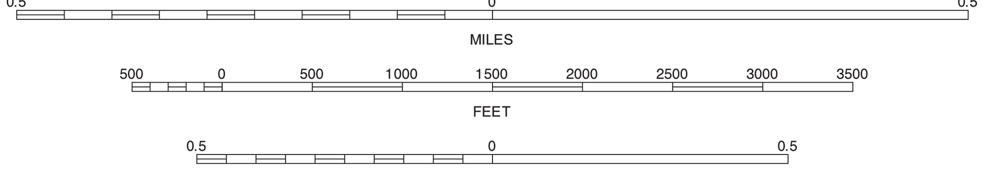


QUARTER QUADRANGLE LOCATION

SCALE 1:12000



29	30	31
38		40
46	47	48

29 RAWSON NW
30 RAWSON NE
31 ARLINGTON NW
38 RAWSON SW
40 ARLINGTON SW
46 ADA NW
47 ADA NE
48 DUNKIRK NW

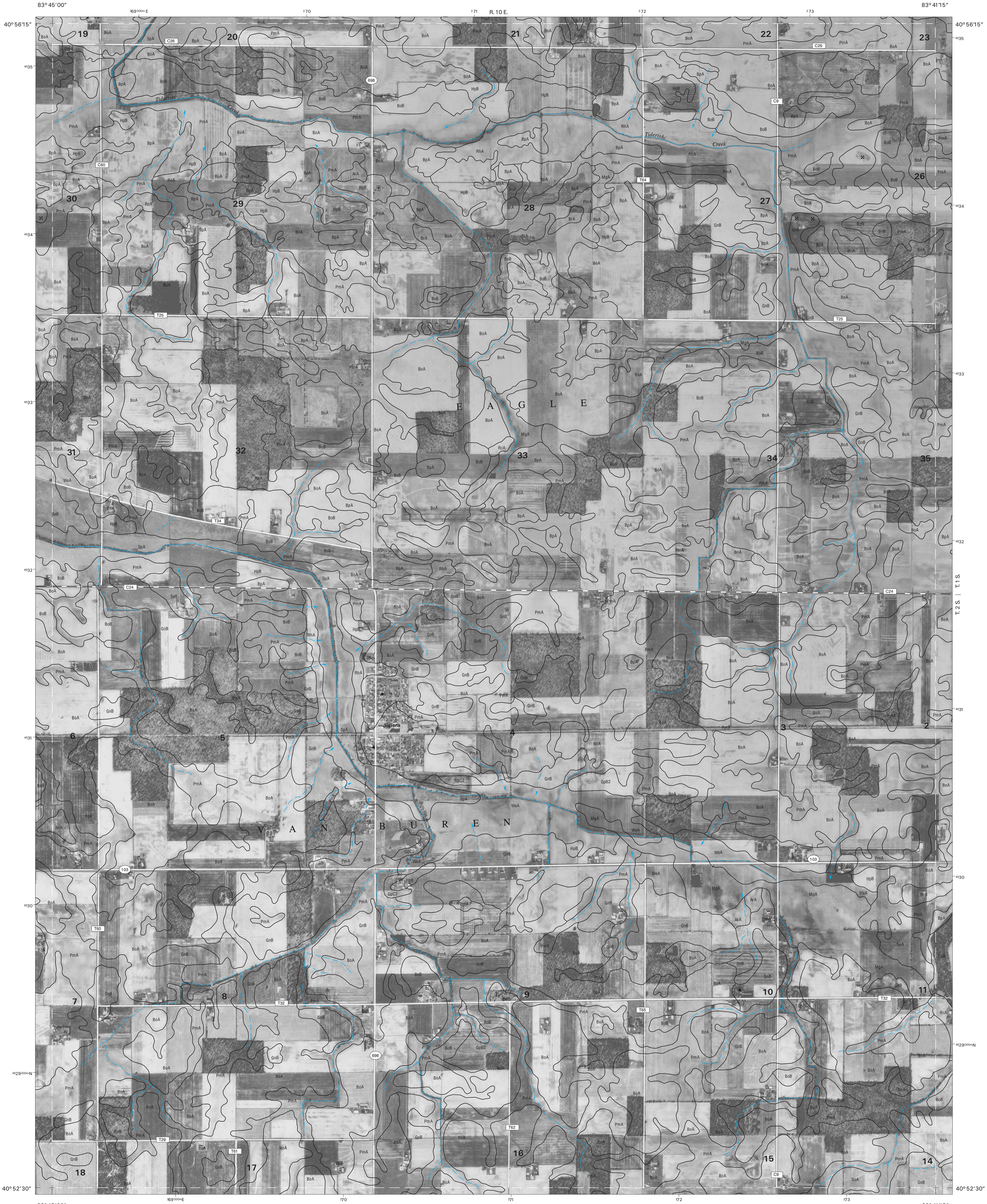
INDEX TO ADJOINING 3.75 MAPS

RAWSON SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 39 OF 51

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARLINGTON SW QUADRANGLE
SHEET NUMBER 40 OF 51



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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

30	31	32
39		41
47	48	49

30 RAWSON NE
31 ARLINGTON NW
32 ARLINGTON NE
39 RAWSON SE
41 ARLINGTON SE
47 ADA NE
48 DUNKIRK NW
49 DUNKIRK NE

INDEX TO ADJOINING 3.75 MAPS

ARLINGTON SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 40 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ARLINGTON SE QUADRANGLE
SHEET NUMBER 41 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

31	32	33
40		42
48	49	50

31 ARLINGTON NW
32 ARLINGTON NE
33 MOUNT BLANCHARD NW
40 ARLINGTON SW
42 MOUNT BLANCHARD SW
48 DUNKIRK NW
49 DUNKIRK NE
50 FOREST NW

INDEX TO ADJOINING 3.75 MAPS

ARLINGTON SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 41 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MOUNT BLANCHARD SW QUADRANGLE
SHEET NUMBER 42 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

32	33	34
41		43
49	50	51

32 ARLINGTON NE
33 MOUNT BLANCHARD NW
34 MOUNT BLANCHARD NE
41 ARLINGTON SE
43 MOUNT BLANCHARD SE
49 DUNKIRK NE
50 FOREST NW
51 FOREST NE

INDEX TO ADJOINING 3.75 MAPS

MOUNT BLANCHARD SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 42 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
MOUNT BLANCHARD SE QUADRANGLE
SHEET NUMBER 43 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

33	34	35
42		44
50	51	

33 MOUNT BLANCHARD NW
34 MOUNT BLANCHARD NE
35 CAREY NW
42 MOUNT BLANCHARD SW
44 CAREY SW
50 FOREST NW
51 FOREST NE

INDEX TO ADJOINING 3.75 MAPS

MOUNT BLANCHARD SE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 43 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
CAREY SW QUADRANGLE
SHEET NUMBER 44 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

0.5 0 0.5
MILES

500 0 500 1000 1500 2000 2500 3000 3500
FEET

0.5 0 0.5
KILOMETERS

34	35	36
43		
51		

34 MOUNT BLANCHARD NE
35 CAREY NW
36 CAREY NE
43 MOUNT BLANCHARD SE
51 FOREST NE

INDEX TO ADJOINING 3.75 MAPS

CAREY SW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 44 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
BEAVERDAM NE QUADRANGLE
SHEET NUMBER 45 OF 51

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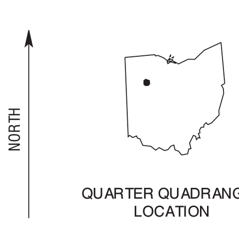
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



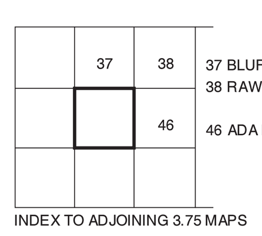
QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS



INDEX TO ADJOINING 3.75 MAPS

BEAVERDAM NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 45 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ADA NW QUADRANGLE
SHEET NUMBER 46 OF 51

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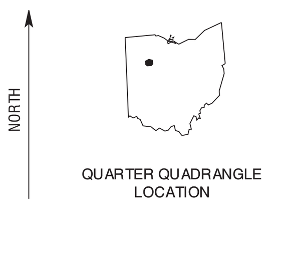
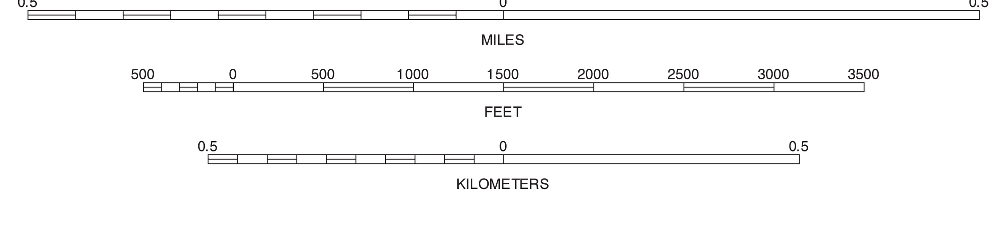
North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUARTER QUADRANGLE LOCATION

SCALE 1:12000



37	38	39
45		47

37 BLUFFTON SE
38 RAWSON SW
39 RAWSON SE
45 BEAVERDAM NE
47 ADA NE

INDEX TO ADJOINING 3.75 MAPS

ADA NW, OHIO

3.75 MINUTE SERIES
SHEET NUMBER 46 OF 51

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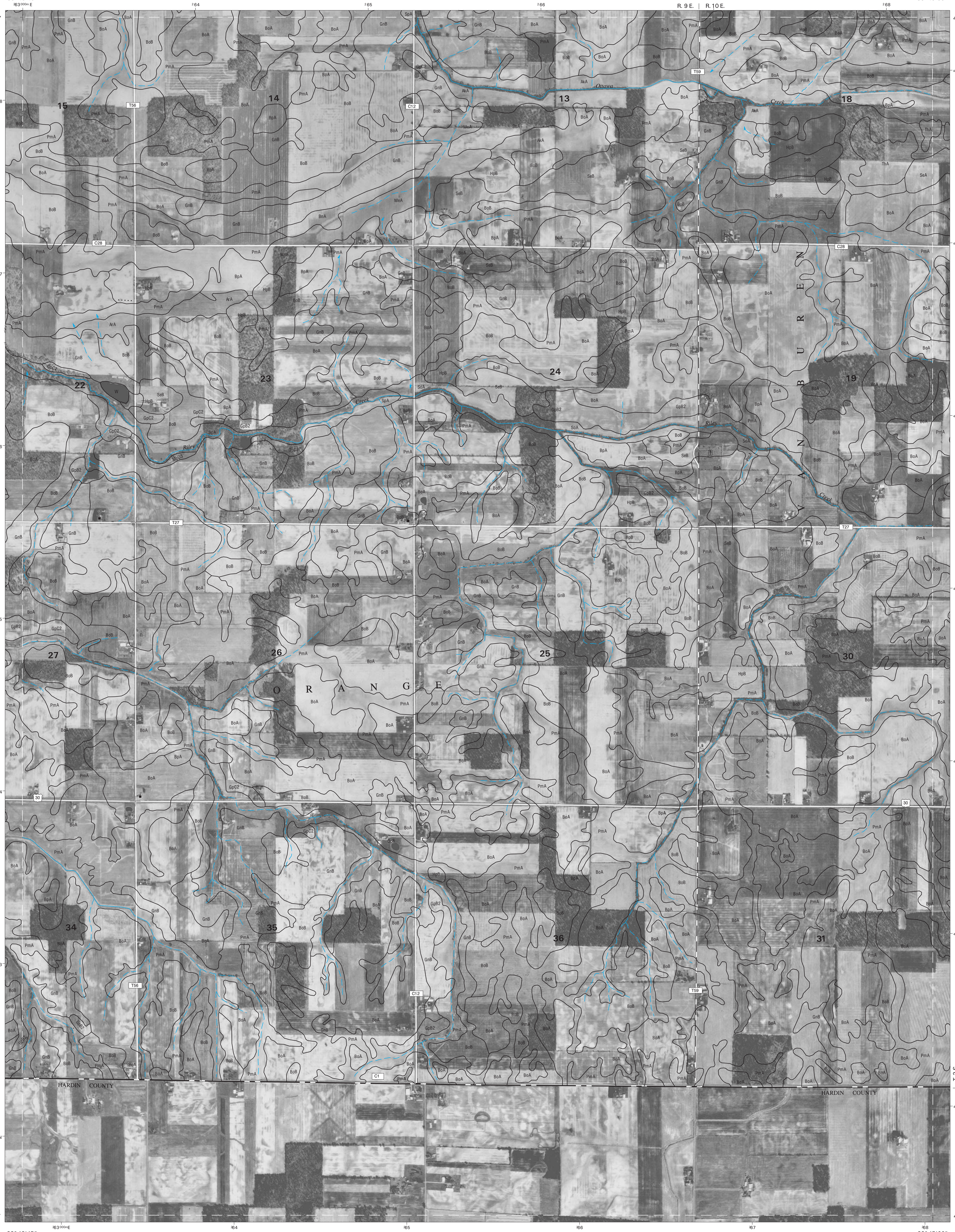
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
ADA NE QUADRANGLE
SHEET NUMBER 47 OF 51



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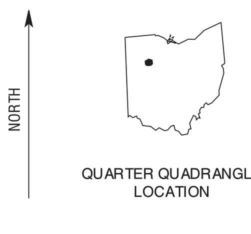

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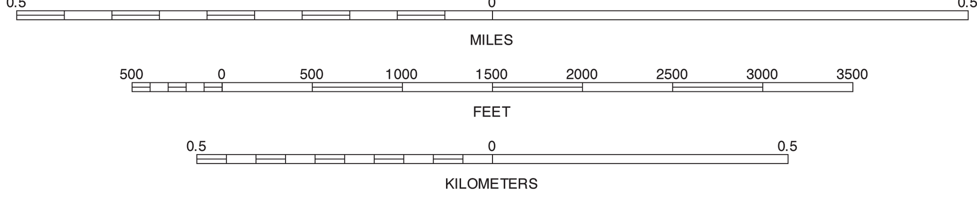

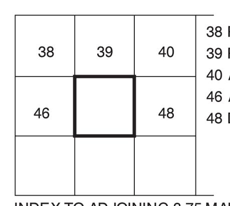

38 RAWSON SW
39 RAWSON SE
40 ARLINGTON SW
46 ADA NW
48 DUNKIRK NW

INDEX TO ADJOINING 3.75 MAPS

ADA NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 47 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
DUNKIRK NW QUADRANGLE
SHEET NUMBER 48 OF 51

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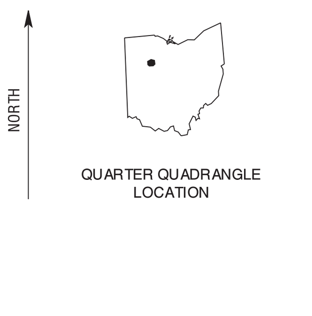

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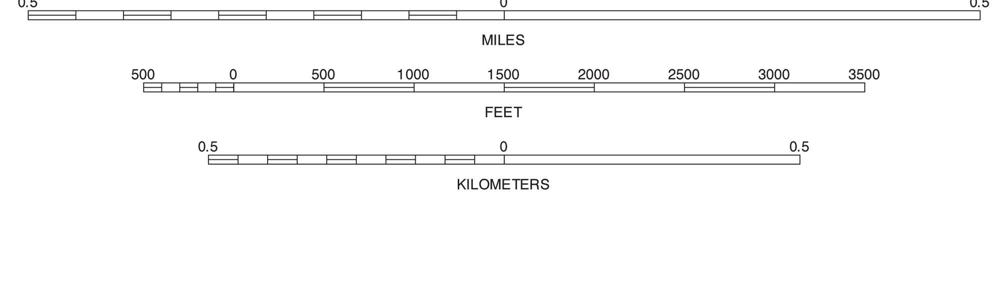

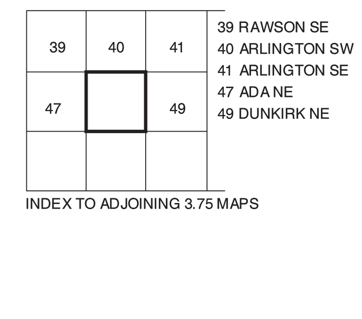

DUNKIRK NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 48 OF 51

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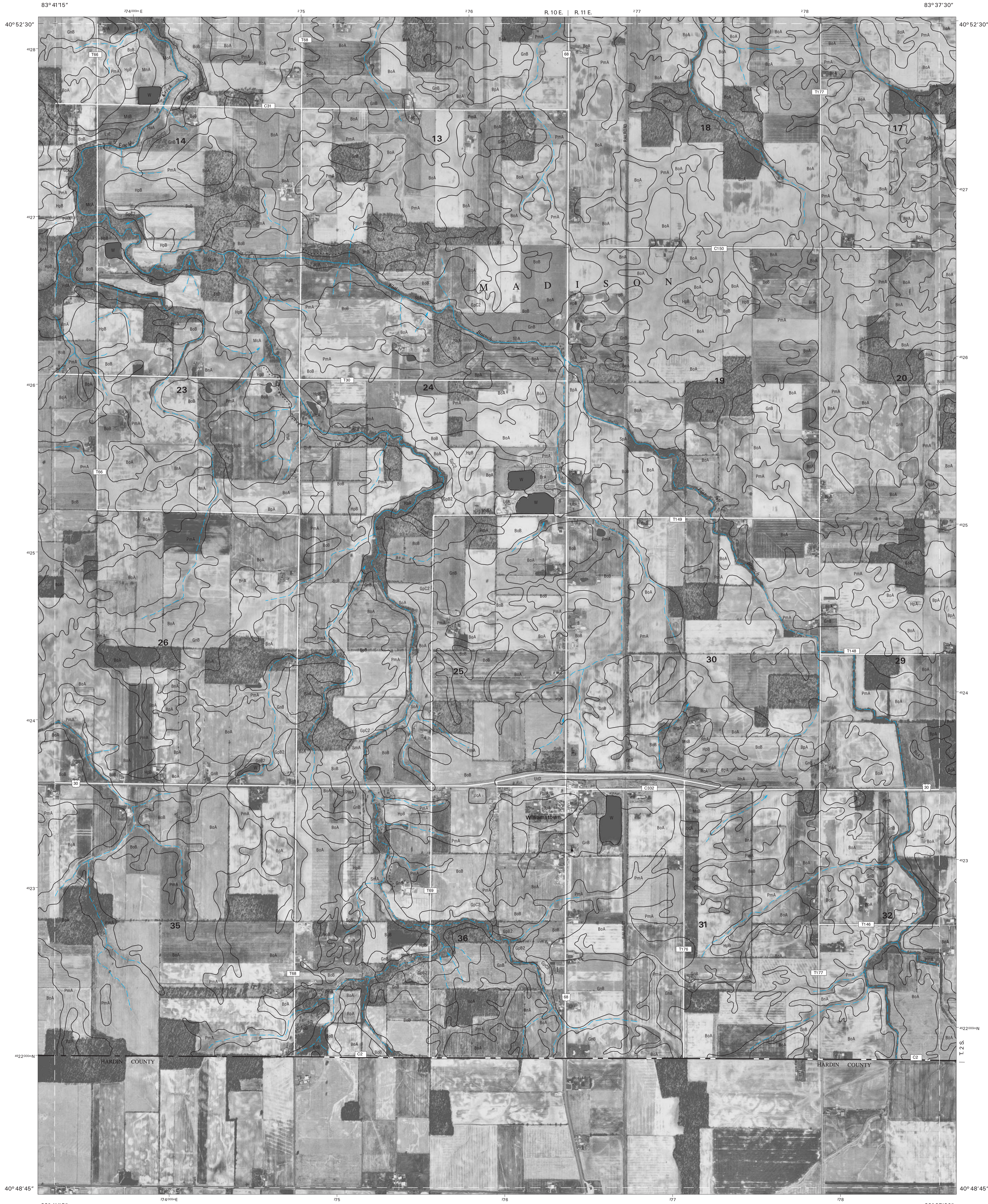
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
DUNKIRK NE QUADRANGLE
SHEET NUMBER 49 OF 51



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North American Datum of 1983 (NAD83), GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

40	41	42
48		50

40 ARLINGTON SW
41 ARLINGTON SE
42 MOUNT BLANCHARD SW
48 DUNKIRK NW
50 FOREST NW

INDEX TO ADJOINING 3.75 MAPS

DUNKIRK NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 49 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FOREST NW QUADRANGLE
SHEET NUMBER 50 OF 51

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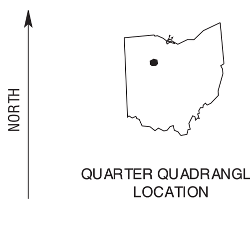
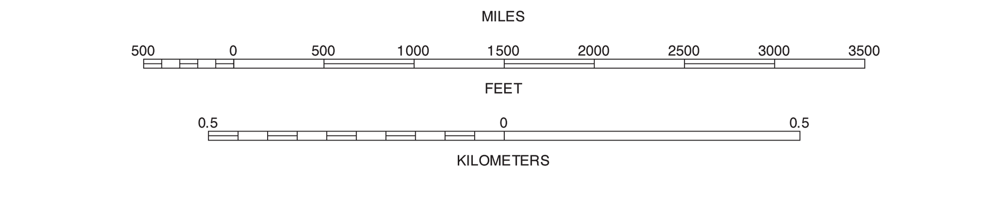
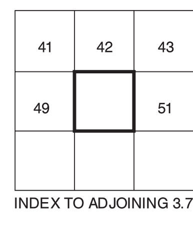


QUARTER QUADRANGLE LOCATION

SCALE 1:12000





41 ARLINGTON SE
42 MOUNT BLANCHARD SW
43 MOUNT BLANCHARD SE
49 DUNKIRK NE
51 FOREST NE

INDEX TO ADJOINING 3.75 MAPS

FOREST NW, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 50 OF 51

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

HANCOCK COUNTY, OHIO
FOREST NE QUADRANGLE
SHEET NUMBER 51 OF 51

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 17. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUARTER QUADRANGLE LOCATION

SCALE 1:12000

MILES

FEET

KILOMETERS

42	43	44
50		

42 MOUNT BLANCHARD SW
43 MOUNT BLANCHARD SE
44 CAREY SW
50 FOREST NW

INDEX TO ADJOINING 3.75 MAPS

FOREST NE, OHIO
3.75 MINUTE SERIES
SHEET NUMBER 51 OF 51

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